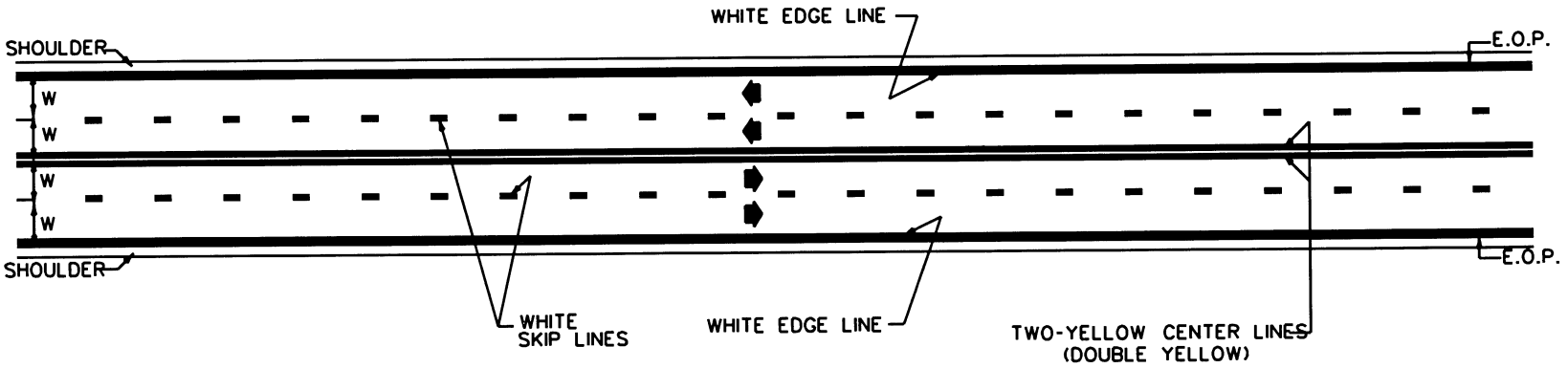
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

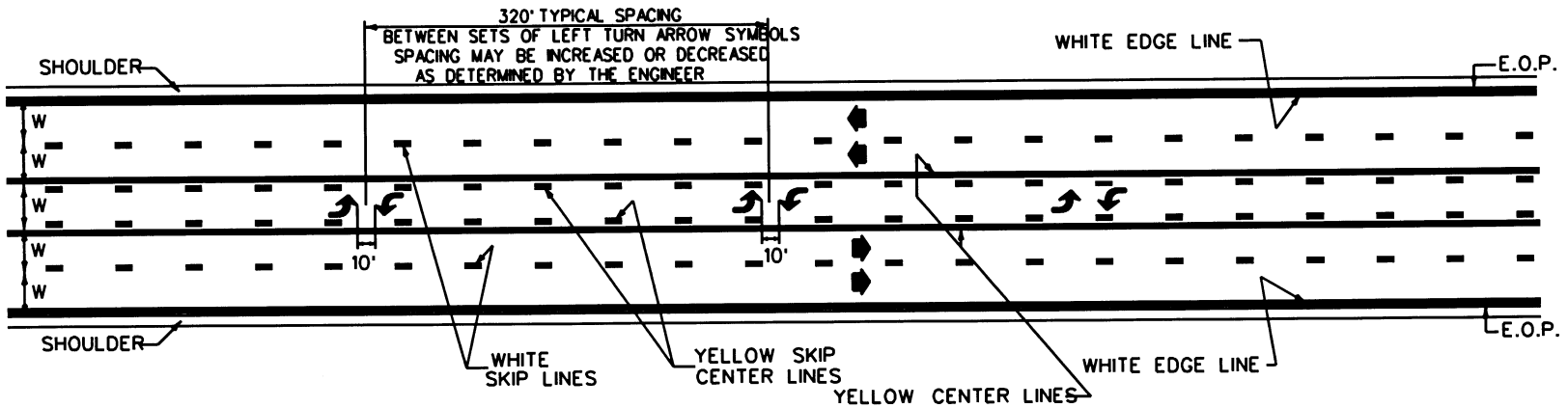
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
UNDIVIDED MULTI-LANE, TWO-WAY ROADWAYS

SHEET 2 OF 3
1205.02

UNDIVIDED MULTI-LANE ROADWAY



UNDIVIDED MULTI-LANE ROADWAY WITH TWO-WAY LEFT TURN LANE



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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
UNDIVIDED MULTI-LANE; TWO-WAY ROADWAYS

SHEET 2 OF 3
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STATE OF
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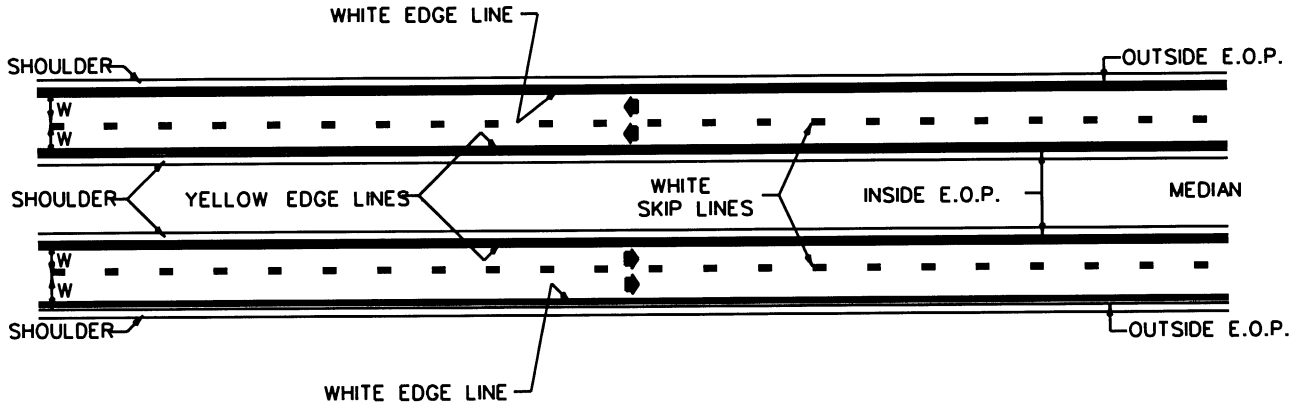
RALEIGH, N.C.

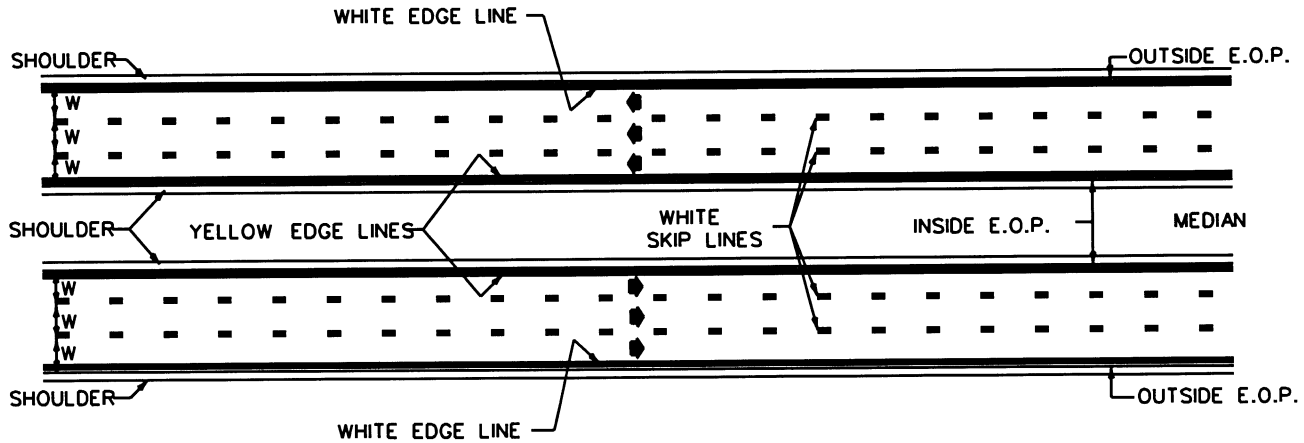
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
DIVIDED MULTI-LANE, TWO-WAY ROADWAYS

SHEET 3 OF 3
1205.02

DIVIDED FOUR LANE ROADWAY



DIVIDED SIX LANE ROADWAY



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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
DIVIDED MULTI-LANE, TWO-WAY ROADWAYS

SHEET 3 OF 3
1205.02

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STATE OF
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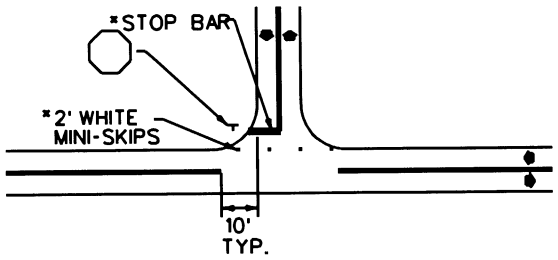
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
NON-SIGNALIZED INTERSECTIONS

SHEET 1 OF 2
1205.04

DETAIL 1



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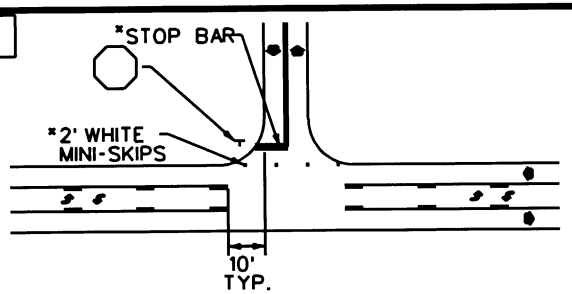
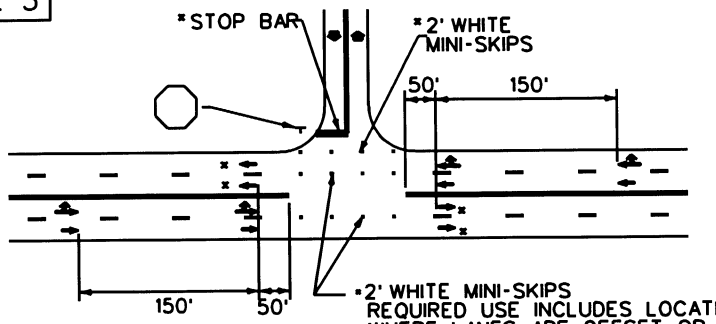
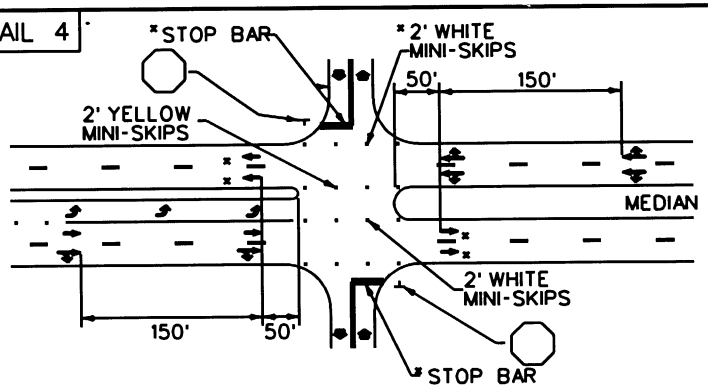


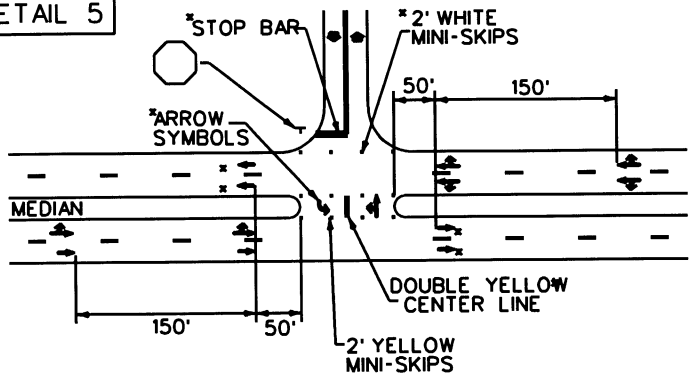
DETAIL 3



DETAIL 4



DETAIL 5



LEGEND

STOP SIGN
PAVEMENT MARKING SYMBOLS
DIRECTION OF TRAFFIC FLOW
* OPTIONAL

NOTE:
DOUBLE YELLOW CENTER LINE, AND ARROW SYMBOLS IN MEDIAN CROSSOVER SHOULD BE USED WHEN WIDTH OF MEDIAN EXCEEDS 30 FT., OTHERWISE THEY ARE NOT REQUIRED.

GENERAL NOTES

- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL, AT SIGNALIZED INTERSECTIONS STOP BARS SHALL BE USED.
- STOP BARS SHOULD BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT, BEHIND WHICH VEHICLES ARE REQUIRED TO STOP, IN COMPLIANCE WITH A STOP SIGN OR TRAFFIC SIGNAL.
- STOP BARS, WHEN USED, SHOULD BE PLACED AT THE DESIRED STOPPING POINT, NO LESS THAN 4 FEET, OR, MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. TEN FEET IS AN OFTEN USED SETBACK DISTANCE.
- STOP BARS SHOULD BE PLACED IN LINE WITH STOP SIGNS. HOWEVER, WHEN STOP SIGNS CANNOT BE LOCATED EXACTLY WHERE VEHICLES ARE EXPECTED TO STOP, THE STOP BARS SHOULD BE PLACED AT THE DESIRED STOPPING POINT.
- YELLOW EDGE LINES SHOULD BE CONTINUED AROUND MEDIAN CROSSOVER RADII.

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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
NON-SIGNALIZED INTERSECTIONS

SHEET 1 OF 2
1205.04

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DETAIL 6

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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
TURN-LANES

SHEET 1 OF 1
1205.05

STATE OF NORTH CAROLINA
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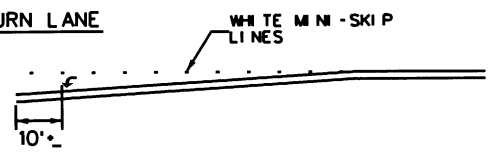
DIVISION OF HIGHWAYS
RALEIGH, N.C.

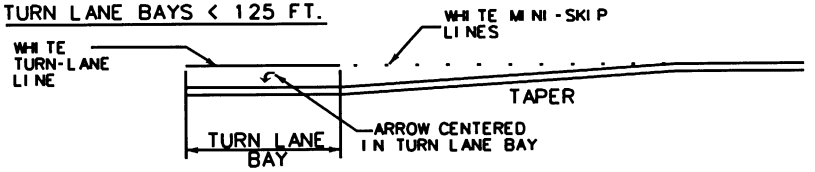
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
TURN-LANES

SHEET 1 OF 1
1205.05

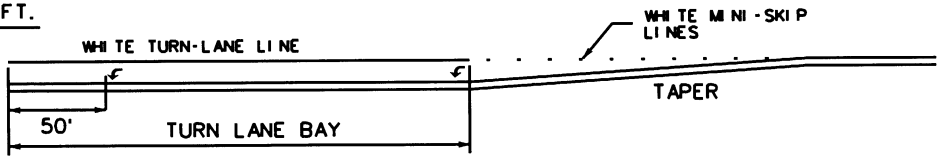
DIRECT TAPER TURN LANE



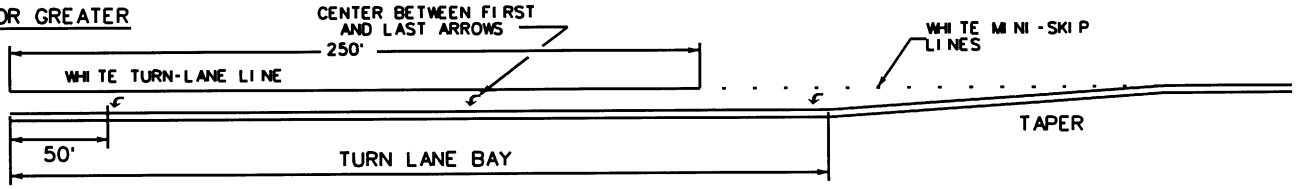
TURN LANE BAYS < 125 FT.



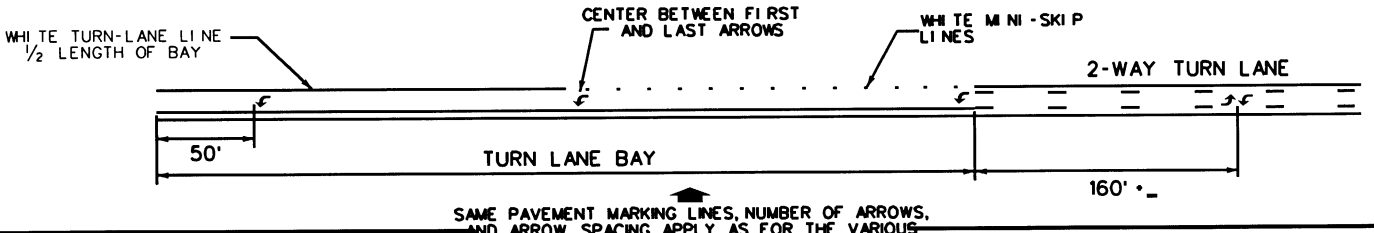
TURN LANE BAYS 125 - 250 FT.



TURN LANE BAYS 250 FT. OR GREATER

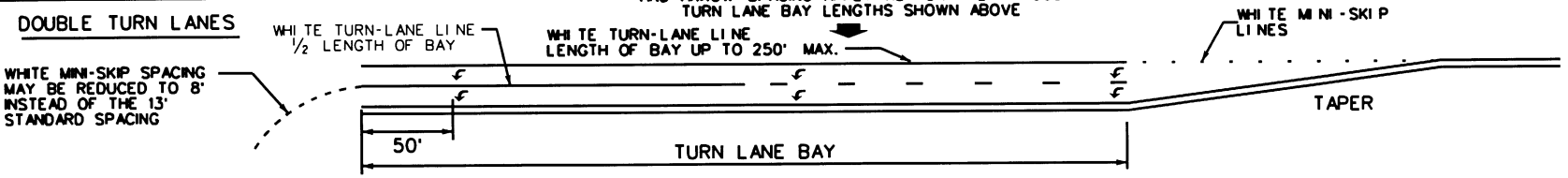


LEFT TURN LANE DEVELOPED FROM 2-WAY TURN LANE



SAME PAVEMENT MARKING LINES, NUMBER OF ARROWS, AND ARROW SPACING APPLY AS FOR THE VARIOUS TURN LANE BAY LENGTHS SHOWN ABOVE

DOUBLE TURN LANES



GENERAL NOTES

-ALL TURN LANE MARKINGS SHOWN APPLY FOR RIGHT & LEFT TURN LANES.

-NUMBER OF ARROWS SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL ARROWS MAY BE USED AS DETERMINED BY THE ENGINEER.

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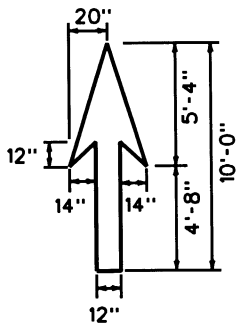
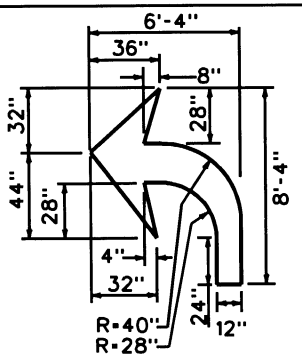
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
ARROW SYMBOLS

SHEET 1 OF 7
1205.08

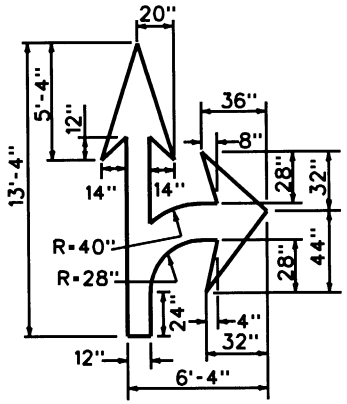
STRAIGHT ARROW



RIGHT OR LEFT TURN ARROW



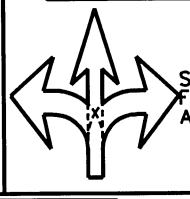
COMBINATION STRAIGHT AND LEFT OR RIGHT TURN ARROW



COMBINATION LEFT & RIGHT TURN ARROW

SAME DIMENSIONS APPLY AS FOR THE LEFT/RIGHT TURN ARROW

COMBINATION LEFT & STRAIGHT & RIGHT TURN ARROW



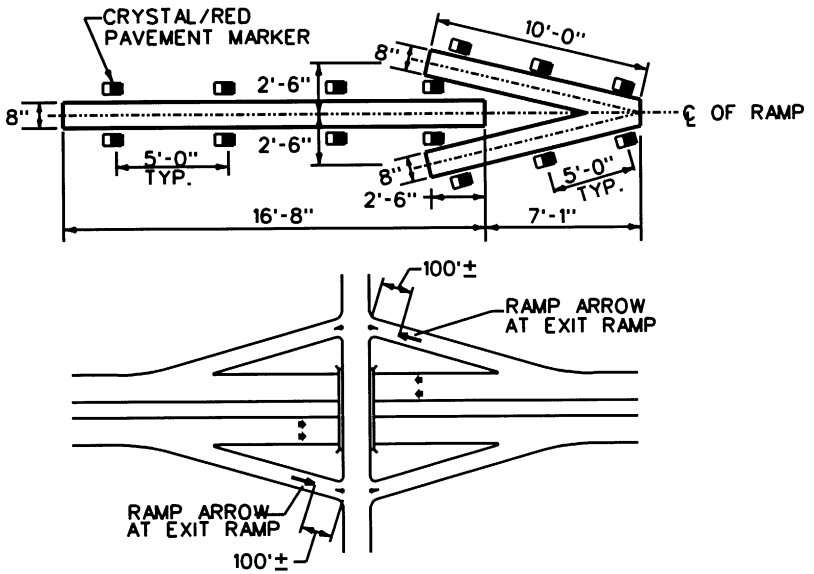
SAME DIMENSIONS APPLY AS FOR THE COMBINATION STRAIGHT AND LEFT/RIGHT TURN ARROW

GENERAL NOTES

- ALL PAVEMENT MARKING SYMBOLS SHALL BE WHITE IN COLOR.
- PAVEMENT MARKING SYMBOLS SHALL NOT BE LOCATED AS TO ENCROACH INTO INTERSECTION AREAS.
- ON PORTLAND CEMENT CONCRETE PAVEMENTS, PAVEMENT MARKING SYMBOLS SHALL NOT BE PLACED ACROSS TRANSVERSE EXPANSION JOINTS, UNLESS APPROVED BY THE ENGINEER.
- ALL SYMBOLS SHALL CONFORM TO THE FHWA "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", (REFER TO SHEETS 4 THRU 7). SYMBOL DIMENSIONS MAY VARY AMONG MANUFACTURERS, THEREFORE SLIGHT VARIANCES ARE ACCEPTABLE, HOWEVER, ALL SYMBOLS ARE REQUIRED TO BE APPROVED BY THE DEPARTMENT.

RAMP ARROW

FOR WRONG-WAY MOVEMENTS
ON FREEWAY AND EXPRESSWAY RAMPS



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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
ARROW SYMBOLS

SHEET 1 OF 7
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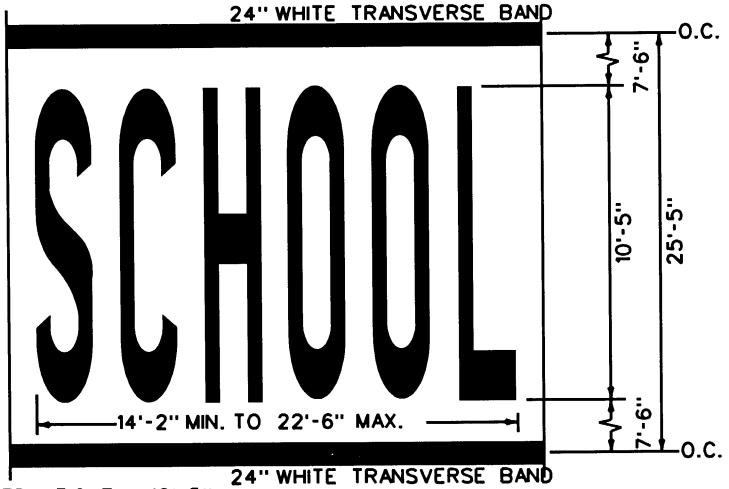
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
SYMBOLS AND WORD MESSAGES

SHEET 2 OF 7
1205.08

NOTE: TWO-LANE FHWA SCHOOL SYMBOL MAY ALSO BE USED AS SHOWN IN PART 7C-6 OF THE MUTCD

TWO-LANE WIDTH "SCHOOL"

REFER TO STD. 1205.10

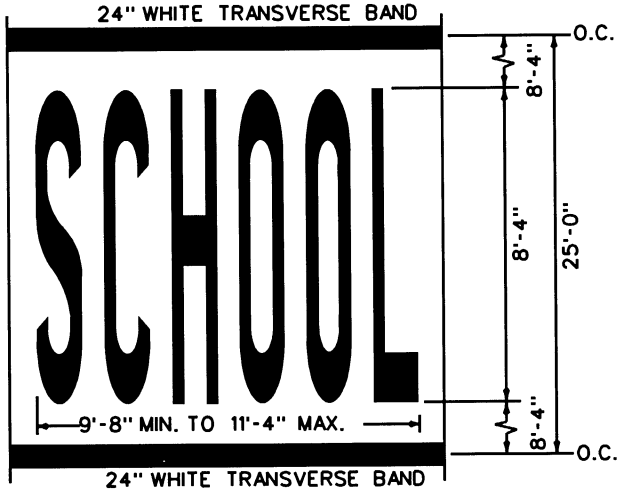


LETTER HEIGHT = 10'-5"
LETTER WIDTH = 20"
SPACING = 10" MIN./30" MAX.

(USE EQUAL SPACING BETWEEN LETTERS AND CENTER ENTIRE SYMBOL IN LANES)

SINGLE LANE "SCHOOL"

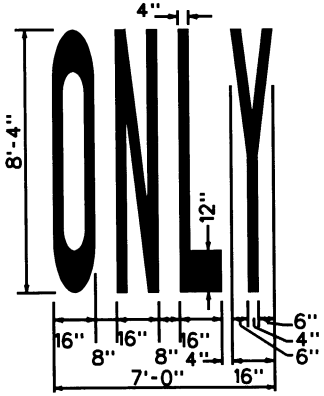
REFER TO STD. 1205.10

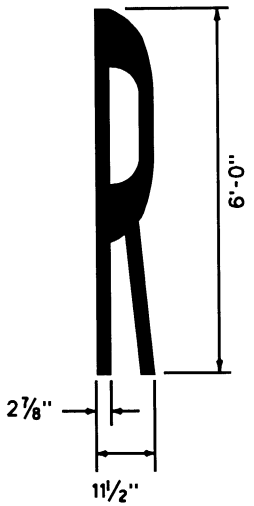


LETTER HEIGHT = 8'-4"
LETTER WIDTH = 16"
SPACING = 4" MIN./8" MAX.

(USE EQUAL SPACING BETWEEN LETTERS AND CENTER ENTIRE SYMBOL IN LANE)

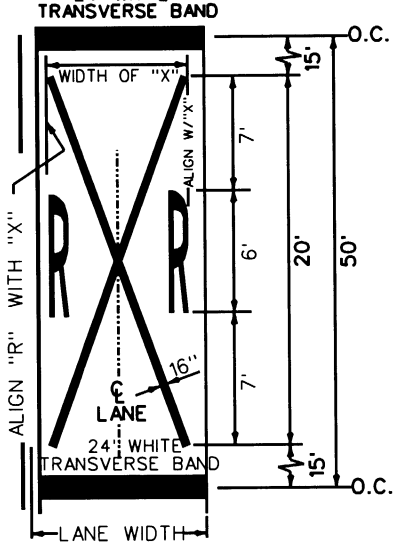
"ONLY"





RAILROAD RXR SYMBOL

REFER TO STD. 1205.11



LANE WIDTH (FEET)	WIDTH OF "X" (FEET)
8'≤W≤9'	7'
9'<W≤12'	8'
W>12'	10'

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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
SYMBOLS AND WORD MESSAGES

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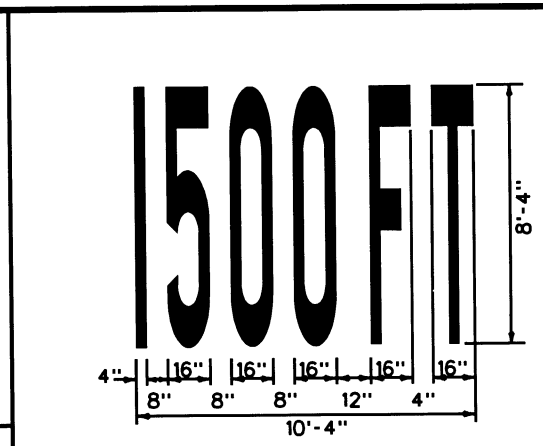
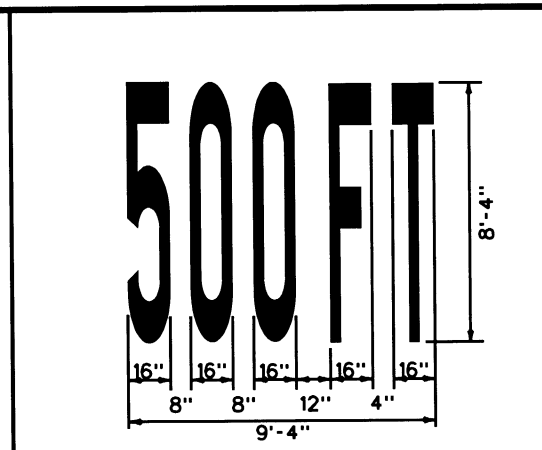
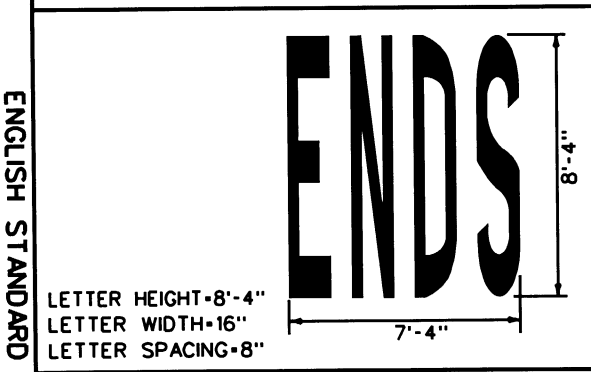
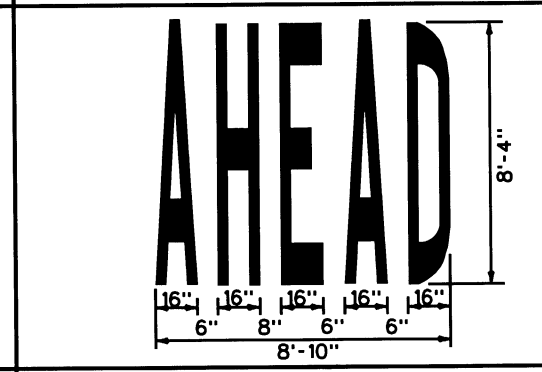
ENGLISH STANDARD DRAWING FOR PAVEMENT MARKINGS

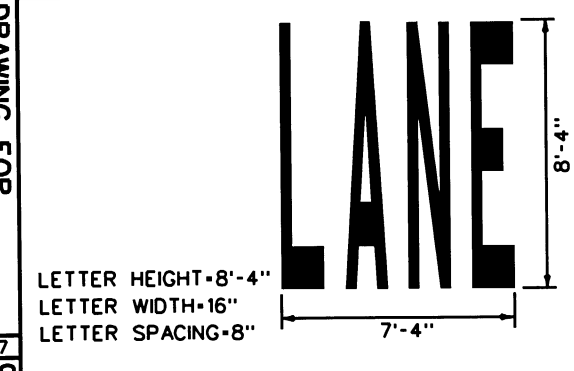
WORD MESSAGES

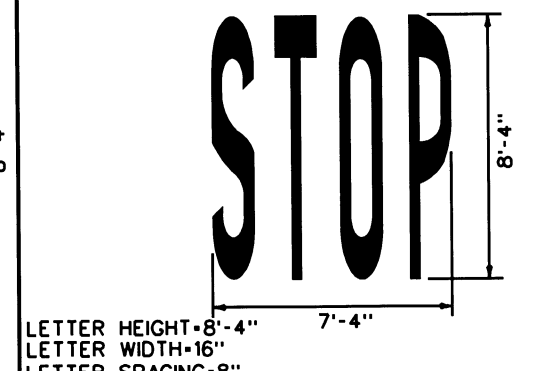


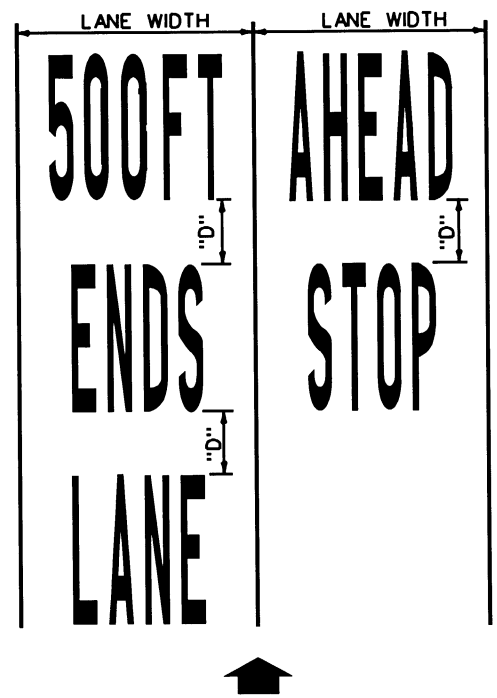












SPEED LIMIT (MPH)	DISTANCE "D" BETWEEN WORD SYMBOLS
35 OR LESS	40'
40 - 50	60'
55 OR GREATER	80'

DISTANCE "D" MAY BE ADJUSTED AS NECESSARY FOR OPTICAL SPACING

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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
WORD MESSAGES

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1205.08

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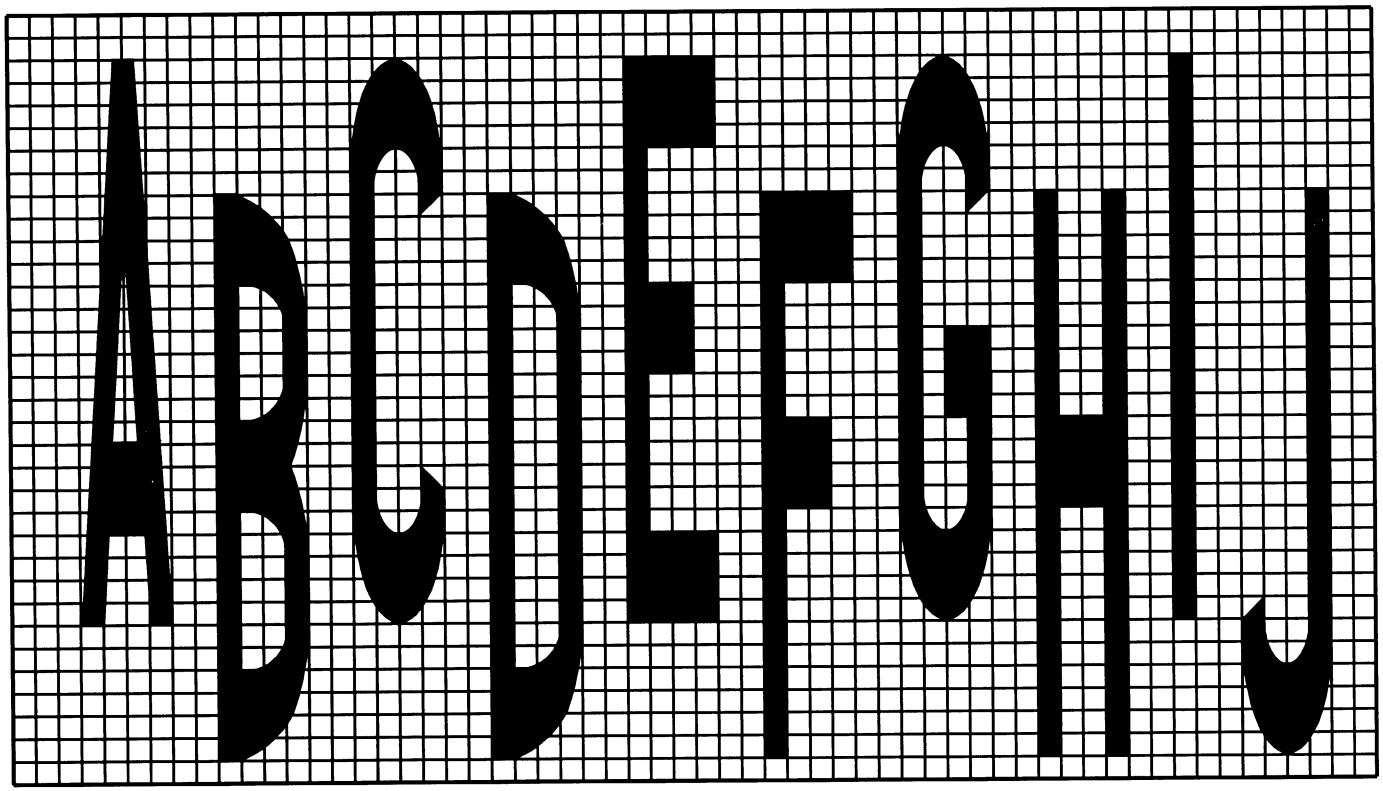
ENGLISH STANDARD DRAWING FOR

PAVEMENT MARKINGS

STANDARD ALPHABET AND SYMBOLS FOR
HIGHWAY PAVEMENT MARKING (USDOT-FHWA)

SHEET 4 OF 7

1205.08



-STANDARD CHARACTERS ARE 25 GRID UNITS HIGH AND 4 UNITS WIDE (EXCEPT LETTER "I" AND THE NUMBER "1" WHICH ARE 1 UNIT WIDE).

-VERTICAL STROKES ARE 1 UNIT WIDE, HORIZONTAL STROKES ARE 4 UNITS HIGH.

-THE SPACE BETWEEN CHARACTERS SHOULD BE 1 UNIT (MIN.) OR AS OTHERWISE SHOWN (OPTICAL SPACING MAY BE USED).

-STANDARD CHARACTER HEIGHTS ARE 8'-4". EXCEPT FOR THE 6' RAILROAD 'R' SYMBOL AND THE TWO-LANE 10'-5" SCHOOL SYMBOL.

-FOR 8'-4" HIGH CHARACTERS THE WIDTH IS 16" (USE 4" FOR EACH GRID SQUARE).

-FOR 10'-5" HIGH CHARACTERS THE WIDTH IS 20" (USE 5" FOR EACH GRID SQUARE).

-FOR 6' HIGH CHARACTERS THE WIDTH IS 11½" (USE 2⅞" FOR EACH GRID SQUARE).

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ENGLISH STANDARD DRAWING FOR

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STANDARD ALPHABET AND SYMBOLS FOR
HIGHWAY PAVEMENT MARKING (USDOT-FHWA)

SHEET 4 OF 7

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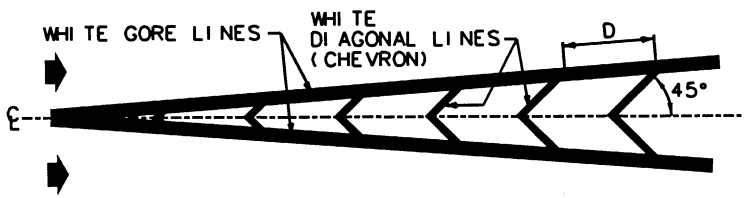
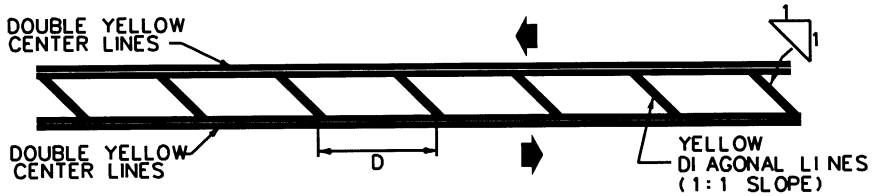
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
PAINTED ISLANDS

SHEET 1 OF 1
1205.09

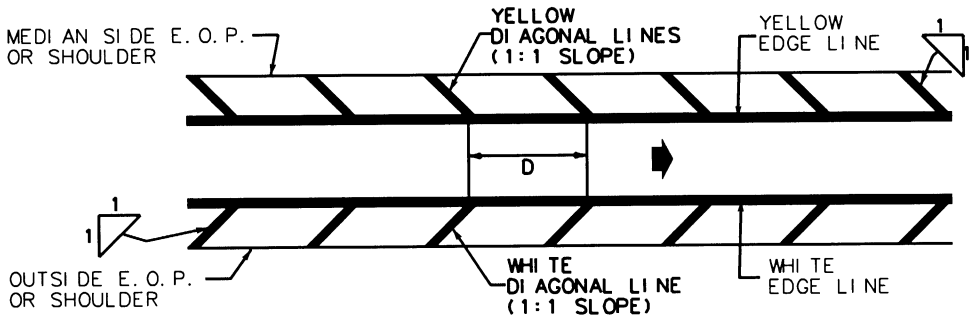
CHANNELIZING ISLAND SEPARATING TRAFFIC IN SAME DIRECTION
(CHEVRON)



MEDIAN ISLAND SEPARATING TRAFFIC IN OPPOSING DIRECTIONS



EDGE OF PAVEMENT OR SHOULDER ISLAND



- D = SPACING OF DIAGONAL LINES (SHOULD TYPICALLY BE EQUAL IN FEET TO THE POSTED SPEED LIMIT).
- ON INTERSTATE ROADWAYS SPACING OF DIAGONALS SHOULD BE INCREASED TO 200' OR MORE.
- SPACING OF DIAGONALS MAY BE ADJUSTED DEPENDING ON THE LENGTH OF THE ISLAND (OPTICAL SPACING MAY BE USED).

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ENGLISH STANDARD DRAWING FOR
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PAINTED ISLANDS

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1205.09

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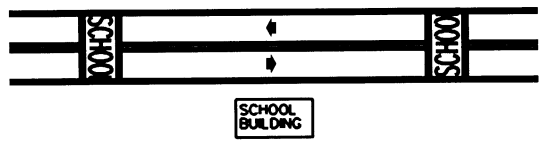
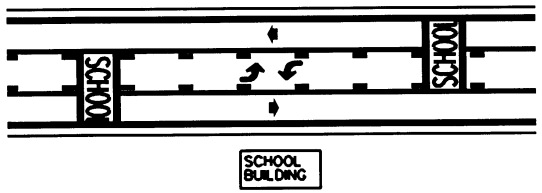
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
SCHOOL AREAS

SHEET 1 OF 1
1205.10

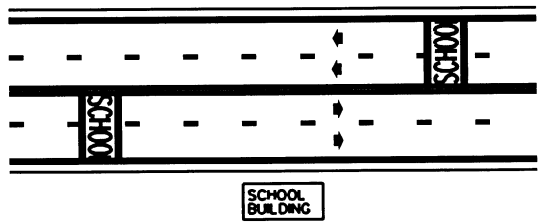
LOCATION OF "SCHOOL" MARKINGS

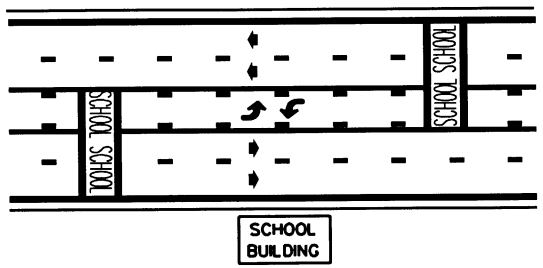
TWO-LANE, TWO-WAY ROADWAYS



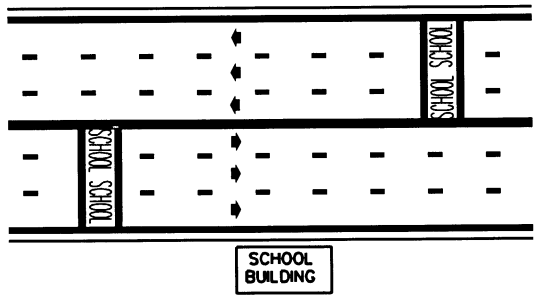


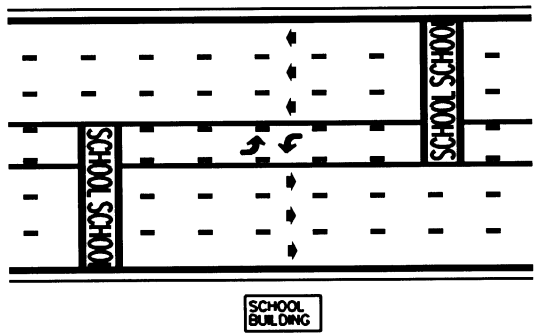
FOUR LANE ROADWAYS (DIVIDED AND UNDIVIDED)

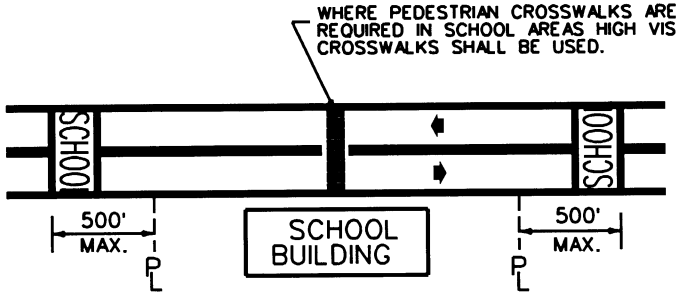




SIX LANE ROADWAYS (DIVIDED AND UNDIVIDED)







GENERAL NOTES

- SINGLE LANE "SCHOOL" WORD MESSAGES MAY BE USED IN EACH APPROACH LANE.
- 24" WHITE TRANSVERSE LINES SHALL EXTEND ACROSS ALL LANES APPROACHING THE SCHOOL AREA, EXCEPT FOR TWO-LANE, TWO-WAY ROADWAYS WHERE THEY SHALL EXTEND ACROSS THE ENTIRE ROADWAY WHEN TWO-LANE MESSAGES ARE USED.
- THE 24" TRANSVERSE BANDS ARE NOT CONSIDERED PART OF THE SCHOOL MESSAGES PAY ITEM, AND WILL BE PAID FOR SEPARATELY.

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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
SCHOOL AREAS

SHEET 1 OF 1
1205.10

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STATE OF
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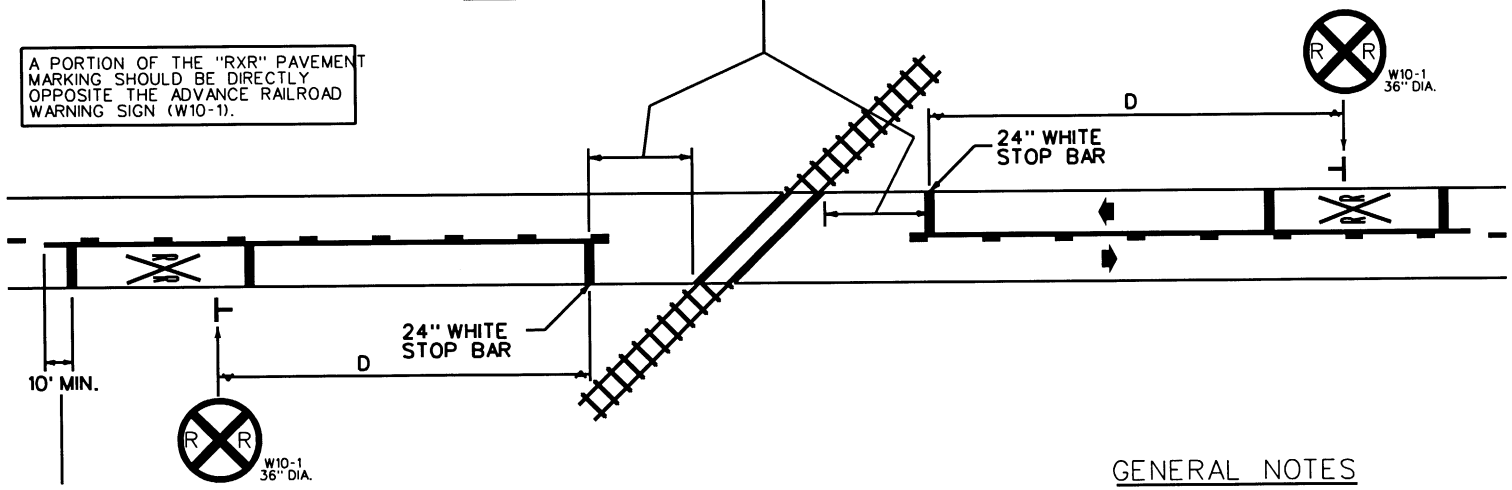
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
RAILROAD · CROSSINGS

SHEET 1 OF 4
1205.11

STOP BAR LOCATION
15 FEET IN ADVANCE OF TRACKS WITHOUT SIGNALS OR GATES.
OR
8 FEET IN ADVANCE OF GATES.
OR
8 FEET IN ADVANCE OF SIGNALS WITHOUT GATES.

A PORTION OF THE "RXR" PAVEMENT MARKING SHOULD BE DIRECTLY OPPOSITE THE ADVANCE RAILROAD WARNING SIGN (W10-1).



YELLOW CENTER LINE SHALL EXTEND AT LEAST 10 FT. PAST THE RAILROAD SYMBOL (OR LONGER AS REQUIRED TO MEET SIGHT DISTANCE REQUIREMENTS).

LEGEND

- DIRECTION OF TRAFFIC FLOW
- PAVEMENT MARKING SYMBOLS
- RAILROAD TRACKS

GENERAL NOTES

- WHERE CENTER LINES OR EDGE LINES DO NOT EXIST, "RXR SYMBOL MARKINGS SHALL EXTEND 6 INCHES FROM THE EDGE OF PAVEMENT TO 8 INCHES FROM THE CENTER LINE OF THE ROADWAY OR THE MARKING SHALL BE POSITIONED TO ACCOMMODATE FUTURE PLACEMENT OF EDGELINE AND CENTER LINE PAVEMENT MARKINGS.
- ON MULTILANE ROADS, THE TRANSVERSE BANDS SHALL EXTEND ACROSS ALL APPROACH LANES AND INDIVIDUAL "RXR" SYMBOLS SHALL BE USED IN EACH APPROACH LANE. THE 24 INCH TRANSVERSE BANDS ARE NOT CONSIDERED A PART OF THE "RXR" SYMBOL PAY ITEM.
- ALL TRANSVERSE BANDS AND STOP BARS SHALL BE POSITIONED PERPENDICULAR TO THE CENTERLINE OF THE ROADWAY.
- FOR ROADWAYS LESS THAN 16 FEET IN WIDTH, THE "RXR" SYMBOL SHALL BE CENTERED ACROSS THE ENTIRE ROADWAY.
- REFER TO SIGNING PLANS OR STD. DWG. 1205.06-SHEET 3 FOR "D" ADVANCE WARNING SIGN PLACEMENT DISTANCE.
- REFER TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" OR SIGNING PLANS FOR ADDITIONAL WARNING SIGNS.

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ENGLISH STANDARD DRAWING FOR
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RAILROAD · CROSSINGS

SHEET 1 OF 4
1205.11

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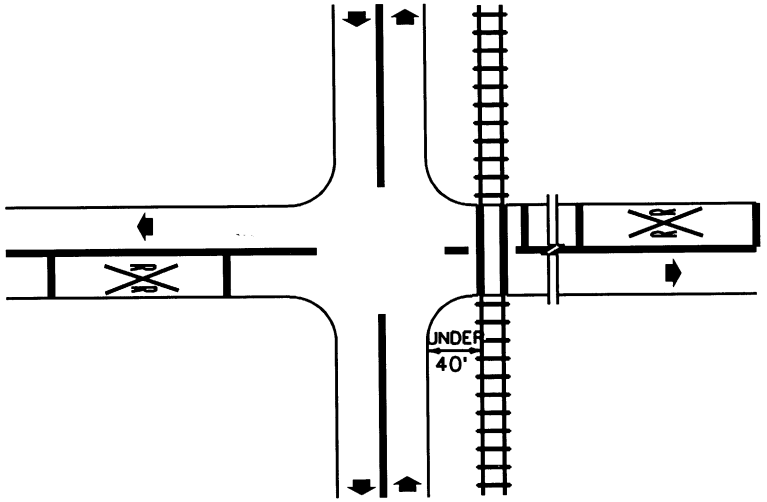
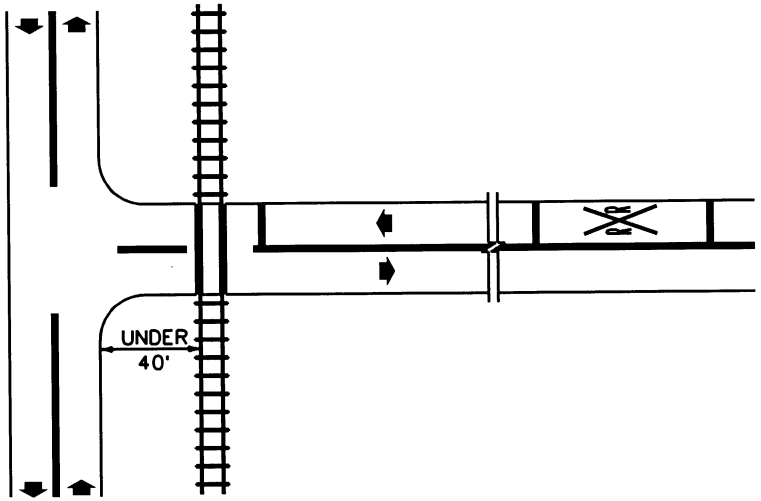
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
RAILROAD · CROSSINGS

SHEET 2 OF 4
1205.11

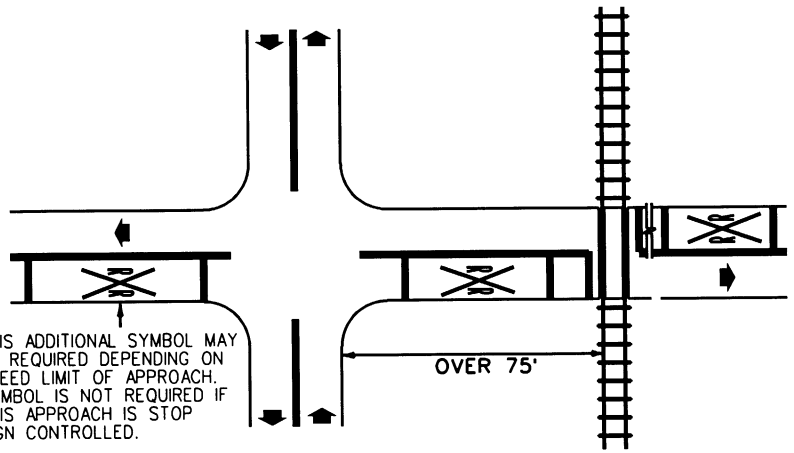
RAILROAD LESS THAN 40 FT. FROM INTERSECTION



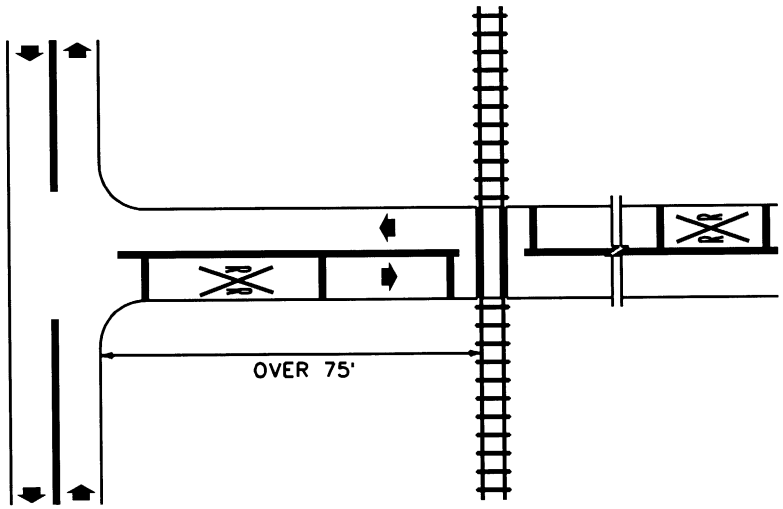
RAILROAD LESS THAN 40 FT. FROM INTERSECTION



RAILROAD MORE THAN 75 FT. FROM INTERSECTION



RAILROAD MORE THAN 75 FT. FROM INTERSECTION



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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
RAILROAD · CROSSINGS

SHEET 2 OF 4
1205.11

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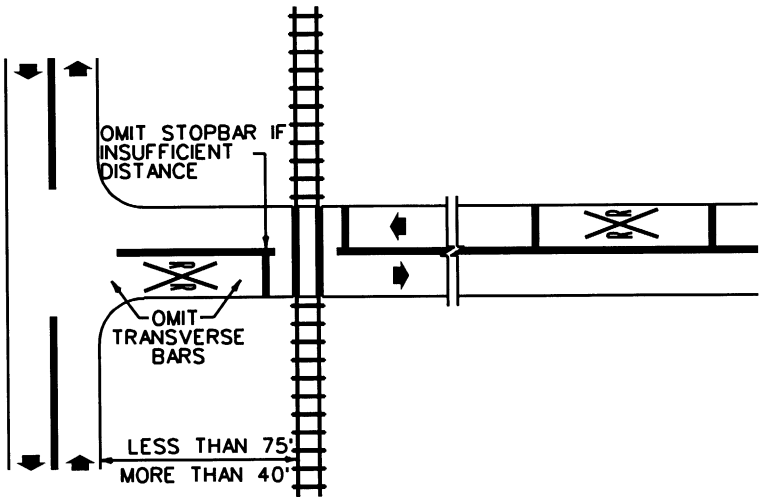
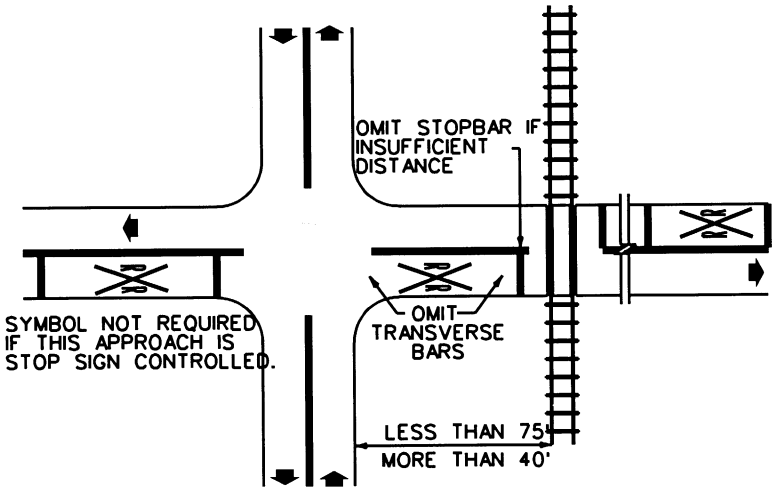
ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS
RAILROAD · CROSSINGS

SHEET 3 OF 4
1205.11

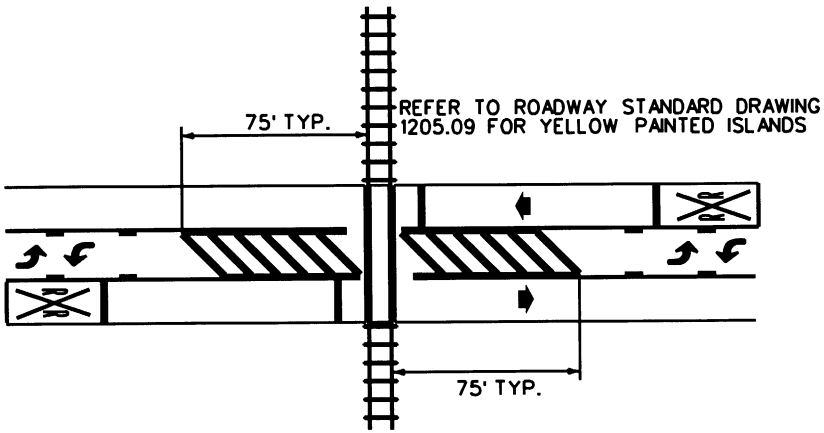
RAILROAD 40 TO 75 FT. FROM INTERSECTION



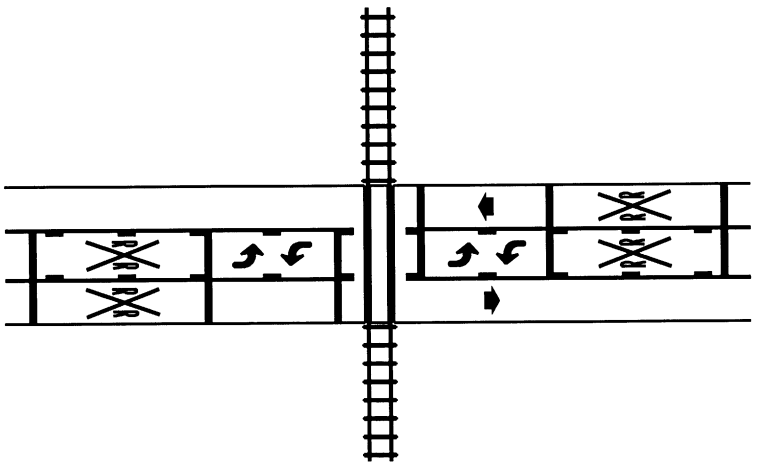
RAILROAD 40 TO 75 FT. FROM INTERSECTION



3-LANE SECTION
CENTER TURN-LANE DISCONTINUED ACROSS TRACKS



3-LANE SECTION
CENTER TURN-LANE CONTINUED ACROSS TRACKS



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ENGLISH STANDARD DRAWING FOR
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RAILROAD · CROSSINGS

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ENGLISH STANDARD DRAWING FOR
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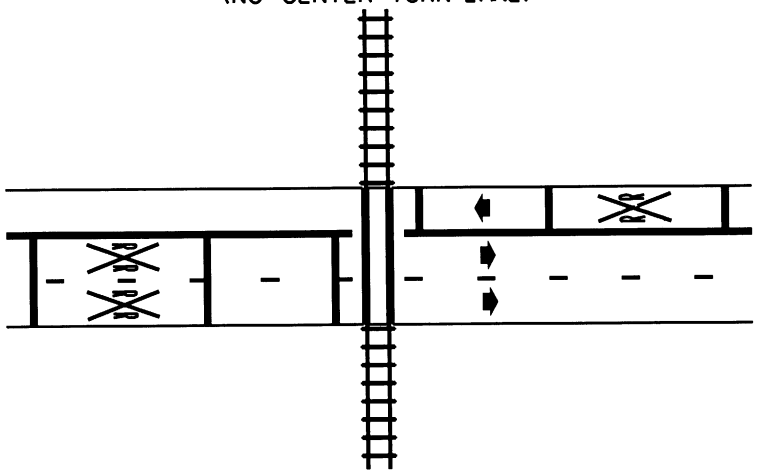
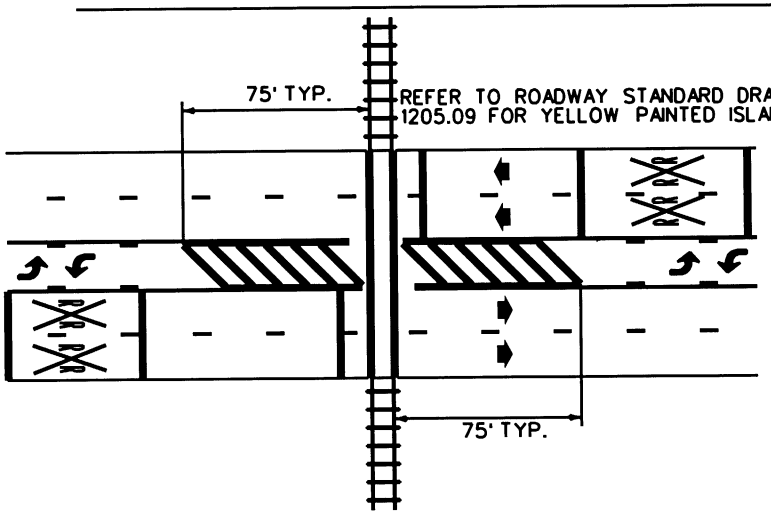
RAILROAD · CROSSINGS

SHEET 4 OF 4
1205.11

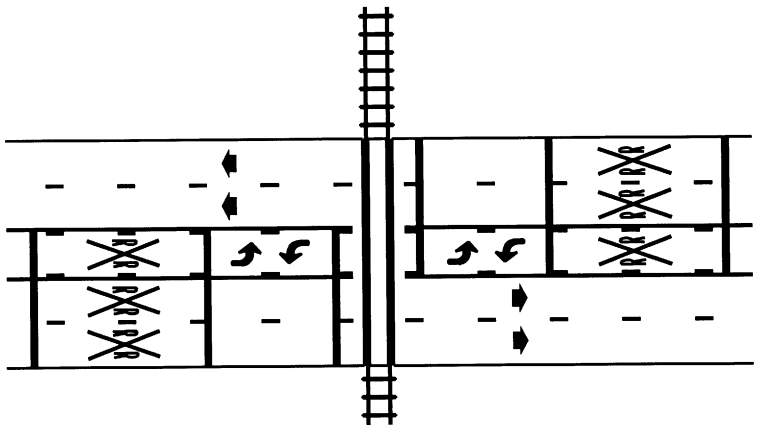
3-LANE, 2-WAY SECTION
(NO CENTER TURN-LANE)



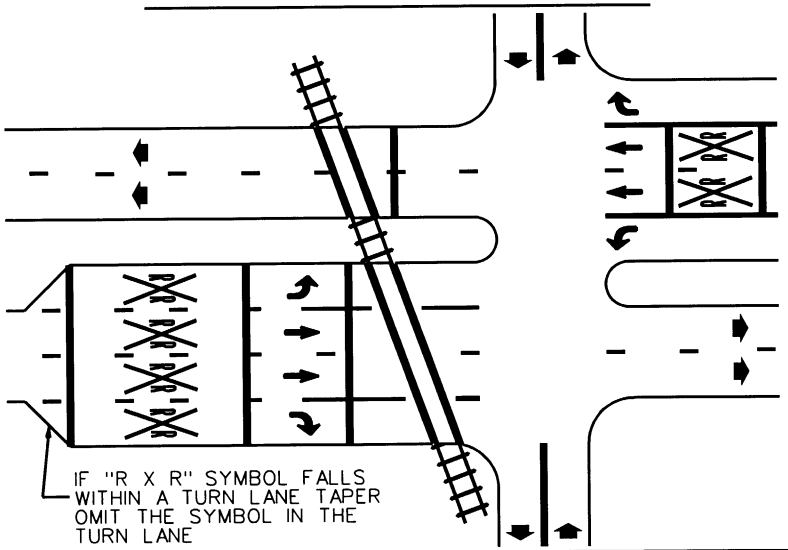
5-LANE SECTION
CENTER TURN-LANE DISCONTINUED ACROSS TRACKS



5-LANE SECTION
CENTER TURN-LANE CONTINUED ACROSS TRACKS



TURN LANES AT RAILROAD CROSSING



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ENGLISH STANDARD DRAWING FOR
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RAILROAD · CROSSINGS

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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKER SPACING

SHEET 1 OF 3
1250.01

GENERAL NOTES

-MARKERS ARE GENERALLY NOT REQUIRED ALONG EDGE LINES, EXCEPT IF DESIGNATED IN THE PLANS, OR DIRECTED BY THE ENGINEER. WHEN THEY ARE REQUIRED, THEY SHALL BE SPACED ON 20 FT. CENTERS, AND OFFSET 2 INCHES FROM THE EDGE LINE ON THE TRAFFIC SIDE.

-CRYSTAL/RED MARKERS SHOULD BE PLACED AT INTERSECTIONS AND INTERCHANGES WHERE WRONG-WAY MOVEMENTS ARE POSSIBLE. THE RED SIDE OF THE MARKER SHALL BE POSITIONED TO FACE "WRONG-WAY" TRAFFIC. WHEN USED, CRYSTAL/RED MARKERS SHOULD BE PLACED ALONG THE ENTIRE LENGTH OF THE PROJECT.

-PAVEMENT MARKER SPACING ALONG THRU LANES SHOULD BE REDUCED AS SHOWN ON THE SPACING CHART WHERE EXCESSIVE AMBIENT LIGHT FROM HIGHWAY ILLUMINATION SYSTEMS, OR OTHER FIXED SOURCES COULD REDUCE THEIR EFFECTIVENESS (0.8 FT.-CANDLES OR GREATER ON ANY 1000 FT. SECTION OF ROADWAY).

-PAVEMENT MARKERS SHOULD NOT BE PLACED CLOSER THAN 2 INCHES TO A PAVEMENT CONSTRUCTION JOINT (AS FEASIBLE), EXCEPT WHEN PLACED BETWEEN DOUBLE YELLOW CENTER LINES, AND ALONG YELLOW SKIP LINES ON TWO-LANE, TWO-WAY ROADWAYS WHERE PASSING IS ALLOWED IN BOTH DIRECTIONS.

-PAVEMENT MARKERS SHALL NOT BE PLACED DIRECTLY ON PAVEMENT MARKING LINES.

-PAVEMENT MARKERS USED IN CONJUNCTION WITH DOUBLE YELLOW CENTER LINES SHALL BE PLACED MID-WAY BETWEEN THE LINES, PROVIDED WITH A GAP BETWEEN THE LINES AND THE MARKER TO REDUCE OVERSPRAYING THE MARKER DURING REPAINTING OPERATIONS.

-MARKERS ARE NOT REQUIRED ALONG MINI-SKIP LINES IN TAPERS.

PAVEMENT MARKER SPACING CHART

TYPE OF PAVEMENT MARKING	TYPICAL SPACING (FT)	
	SPEED LIMIT > 45 M.P.H.	SPEED LIMIT ≤ 45 M.P.H. OR AMBIENT LIGHT
SKIP LINES AND CENTER LINES ALONG THRU LANES		
ALONG TANGENT SECTIONS AND HORIZONTAL CURVES LESS THAN 6°	80	40
HORIZONTAL CURVES > 6°	40	40
TURN-LANES - SKIP LINES	40	
SOLID LINES	20	
CENTER LINES	40	
MINI-SKIP LINES AT LANE DROP APPROACHES	30	
TWO-WAY RAMP CENTER LINES	40	
GORE LINES	20	
PAINTED ISLANDS - WHITE	20	
YELLOW	40	
RAISED MEDIAN ISLANDS	40	
WRONG WAY RAMP ARROW	5	
TAPERS	40	
NARROW BRIDGES - EDGE LINE	20	
CENTER LINE	40	
ONE LANE BRIDGES- EDGE LINE	20	

WORK ZONE APPLICATIONS	
2-LANE, 2-WAY BYPASS DIVERSIONS	20 FT. FOR CENTER LINE
ALL OTHER DIVERSIONS	½ NORMAL SPACING

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ENGLISH STANDARD DRAWING FOR
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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKER SPACING

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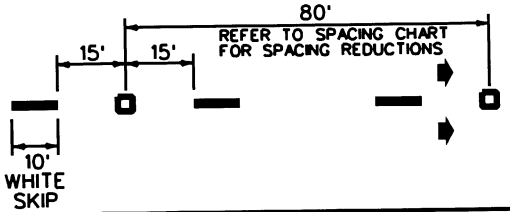
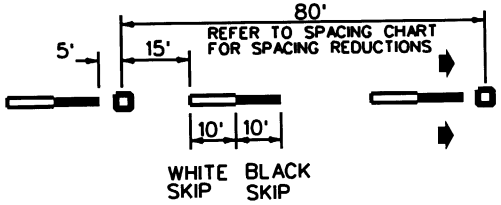
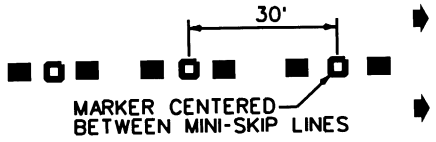
PLACEMENT ALONG WHITE SKIP LINES



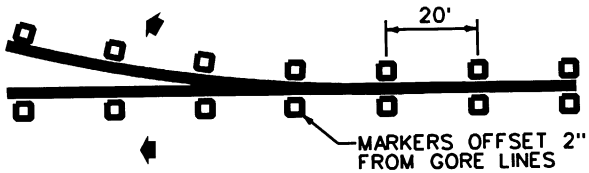
PLACEMENT ALONG WHITE / BLACK SKIP LINES



PLACEMENT ALONG WHITE MINI-SKIP LINES

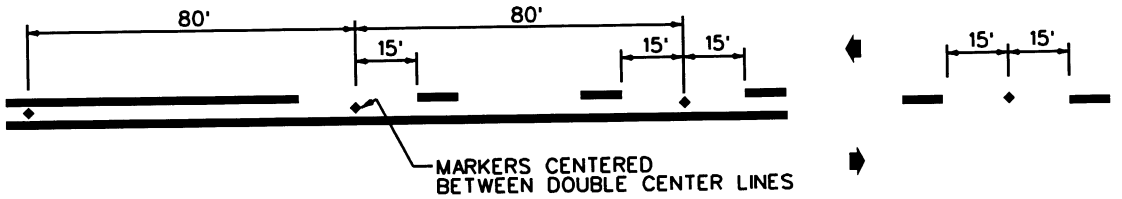


PLACEMENT ALONG WHITE GORE LINES



PLACEMENT ALONG YELLOW CENTER LINES

REFER TO SPACING CHART
FOR SPACING REDUCTIONS

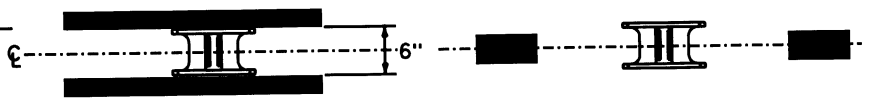


CENTER LINES FOR

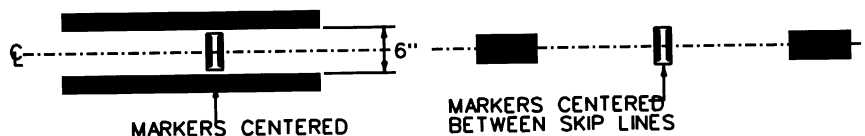
TWO-LANE TWO-WAY ROADWAYS
UNDIVIDED ROADWAYS
TWO-WAY LEFT TURN LANES

DETAIL OF PAVEMENT MARKER PLACEMENT

SNOWPLOWABLE RAISED PAVEMENT MARKERS



RAISED REFLECTIVE PAVEMENT MARKERS



LEGEND

- CRYSTAL/CRYSTAL PAVEMENT MARKER
  OR
- CRYSTAL/RED PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- DIRECTION OF TRAFFIC FLOW

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ENGLISH STANDARD DRAWING FOR
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ENGLISH STANDARD DRAWING FOR
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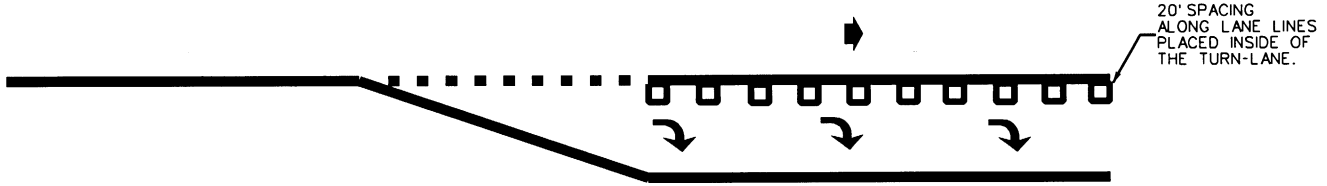
1250.01

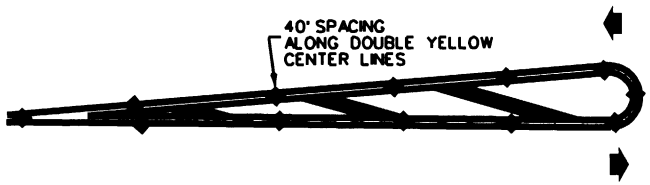
AUXILIARY TURN LANES



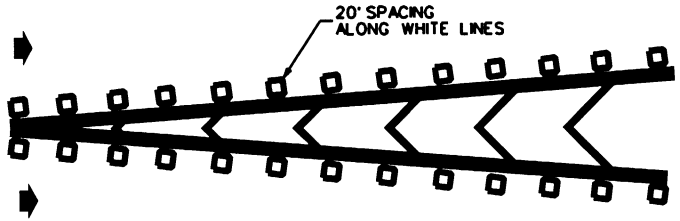
LEGEND

- CRYSTAL/CRYSTAL PAVEMENT MARKER
  OR
- CRYSTAL/RED PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- DIRECTION OF TRAFFIC FLOW

YELLOW PAINTED ISLANDS



WHITE PAINTED ISLANDS



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ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKER SPACING

SHEET 3 OF 3
1250.01

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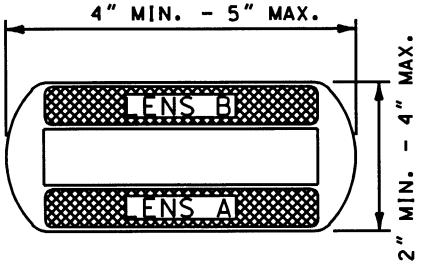
ENGLISH STANDARD DRAWING FOR
RAISED PAVEMENT MARKERS
PERMANENT AND TEMPORARY

SHEET 1 OF 1
1251.01

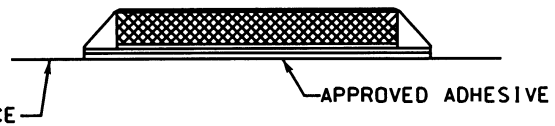
TYPICAL PAVEMENT MARKER

TOP VIEW

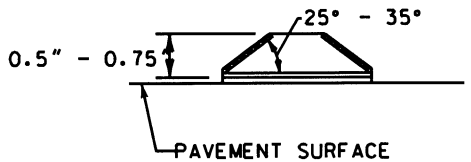


LENS A	LENS B
YELLOW	YELLOW
CRYSTAL	RED
CRYSTAL	CRYSTAL

FRONT VIEW



SIDE VIEW



GENERAL NOTES

-THE AREA OF EACH REFLECTIVE LENS SHALL BE MINIMUM OF 2 SQUARE INCHES.

-FOR A COMPLETE LISTING OF PAVEMENT MARKERS AND ADHESIVES ACCEPTABLE FOR USE IN THIS STATE, REFER TO THE NCDOT APPROVED PRODUCTS LISTING AVAILABLE THROUGH THE DESIGN SERVICES UNIT, RALEIGH, NC.

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ENGLISH STANDARD DRAWING FOR
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PERMANENT AND TEMPORARY

SHEET 1 OF 1
1251.0

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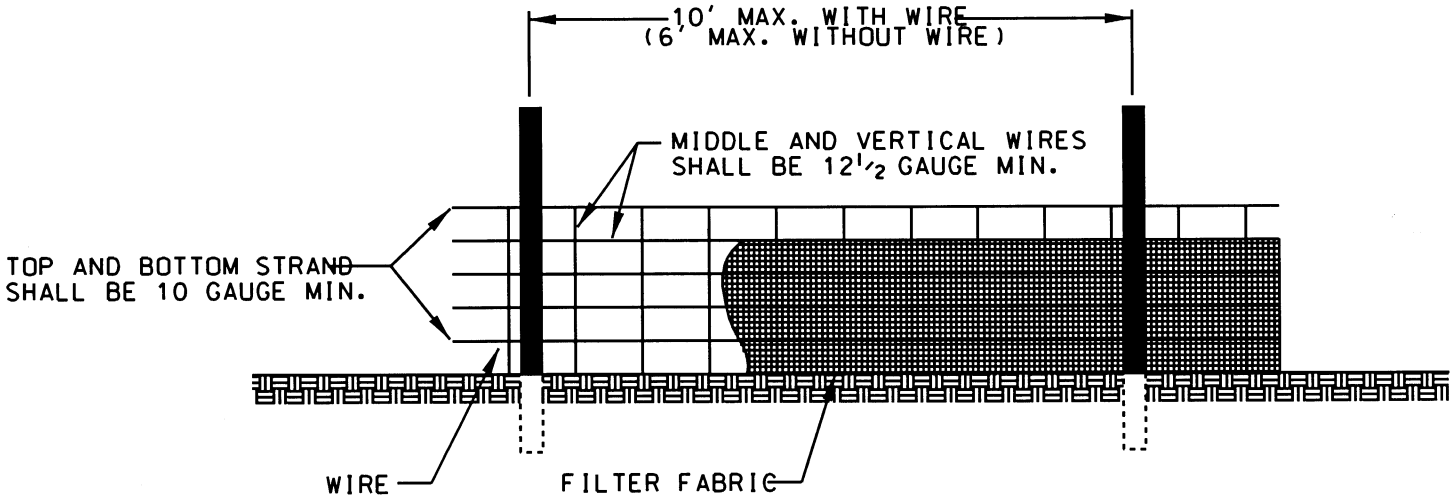
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE



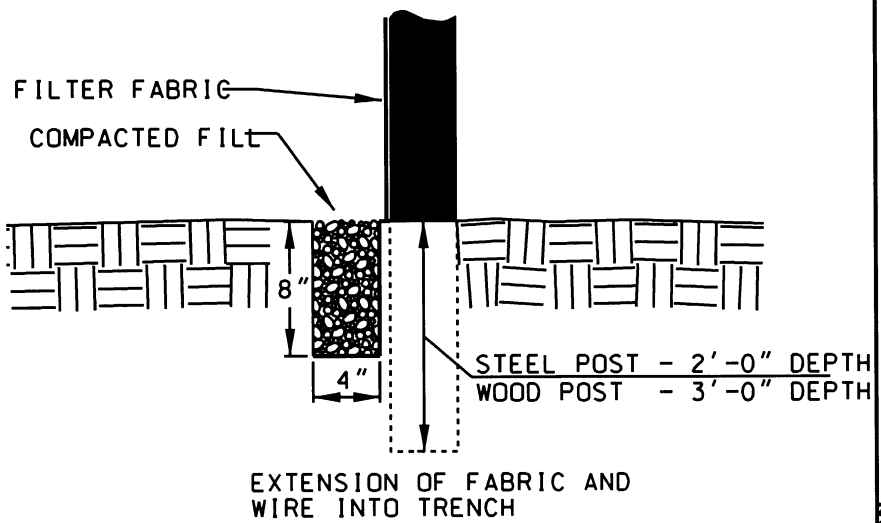
NOTES

WIRE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.

FILTER FABRIC SHALL BE A MINIMUM OF 36" IN WIDTH AND SHALL BE FASTENED ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.

STEEL POST SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.

WOOD POST SHALL BE 6'-0" IN HEIGHT AND 3" IN DIAMETER.



SHEET 1 OF 1
1605.01

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.0

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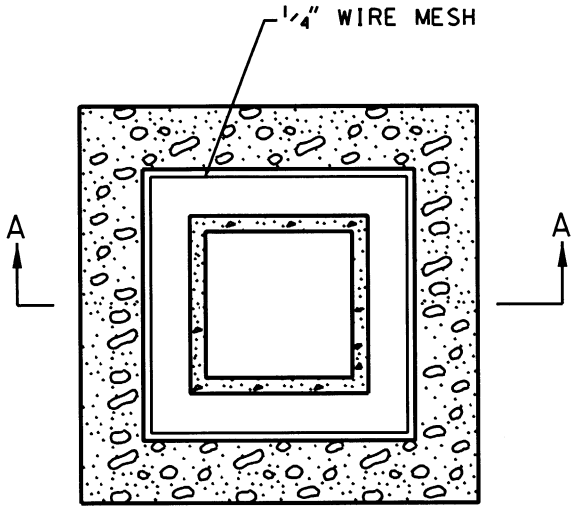
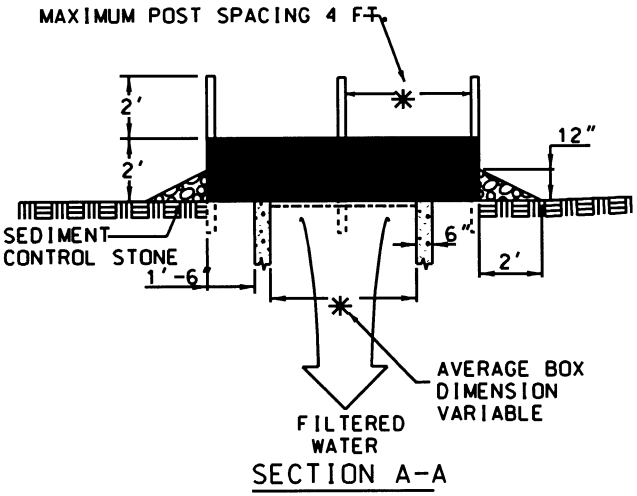
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
ROCK INLET SEDIMENT TRAP
TYPE 'C'

SHEET 1 OF 1
1632.03

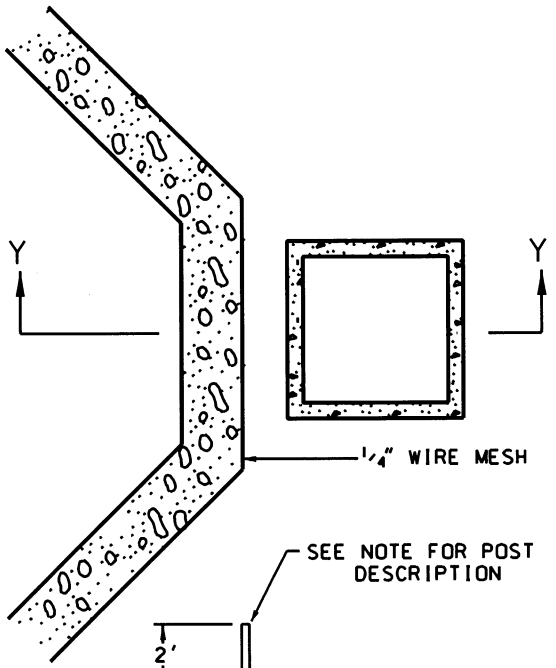




SECTION A-A

MULTI-DIRECTIONAL FLOW

NOTE
SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON "SEDIMENT CONTROL STONE."
WIRE MESH SHALL BE HARDWARE CLOTH 23 GAUGE MIN. AND SHALL HAVE 1/4 INCH MESH OPENINGS.
TOP OF WIRE MESH SHALL BE A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR ANY DIVERSION POINT.
STEEL POST SHALL BE 5 FT. IN HEIGHT, BE INSTALLED 1.5 FT. DEEP MINIMUM, AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
WOOD POST SHALL BE 6 FT. IN HEIGHT, BE INSTALLED TO 1.5 FT. DEEP MINIMUM, AND BE 3 INCHES IN DIAMETER.
POST SPACING SHALL BE A MAXIMUM OF 4 FT.



SECTION Y-Y

SINGLE-DIRECTIONAL FLOW

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
ROCK INLET SEDIMENT TRAP
TYPE 'C'

SHEET 1 OF 1
1632.03

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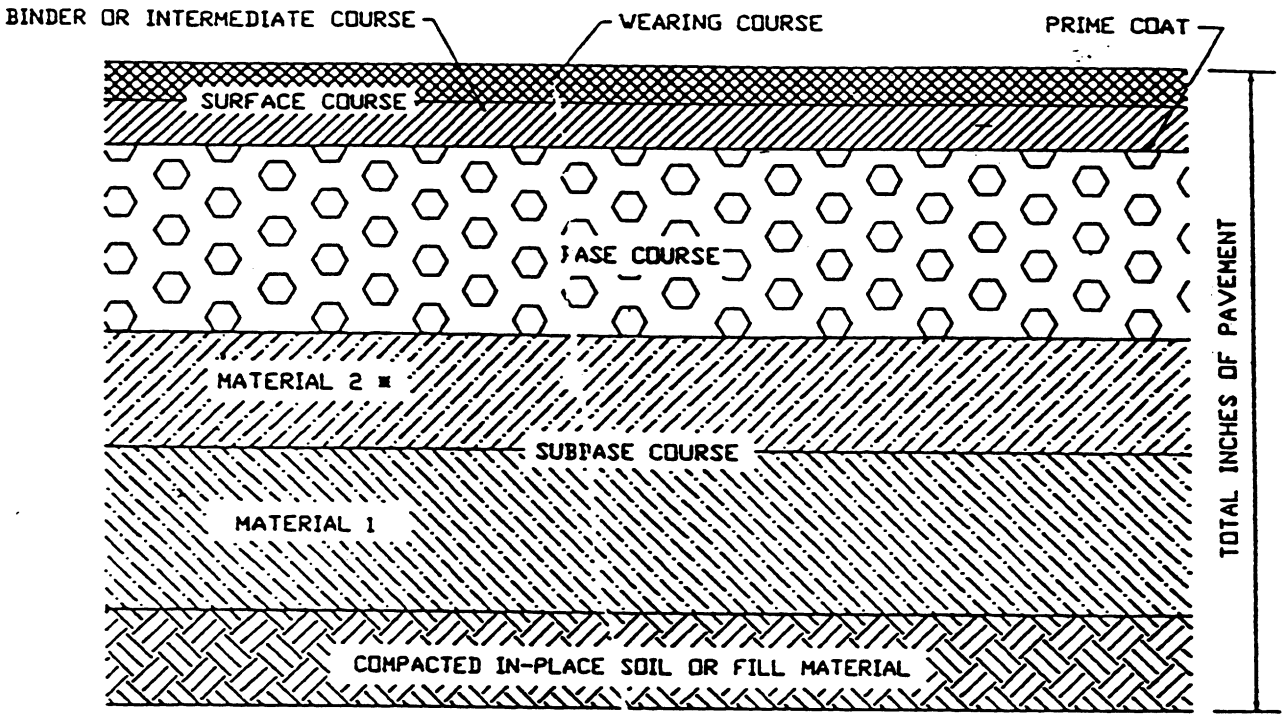
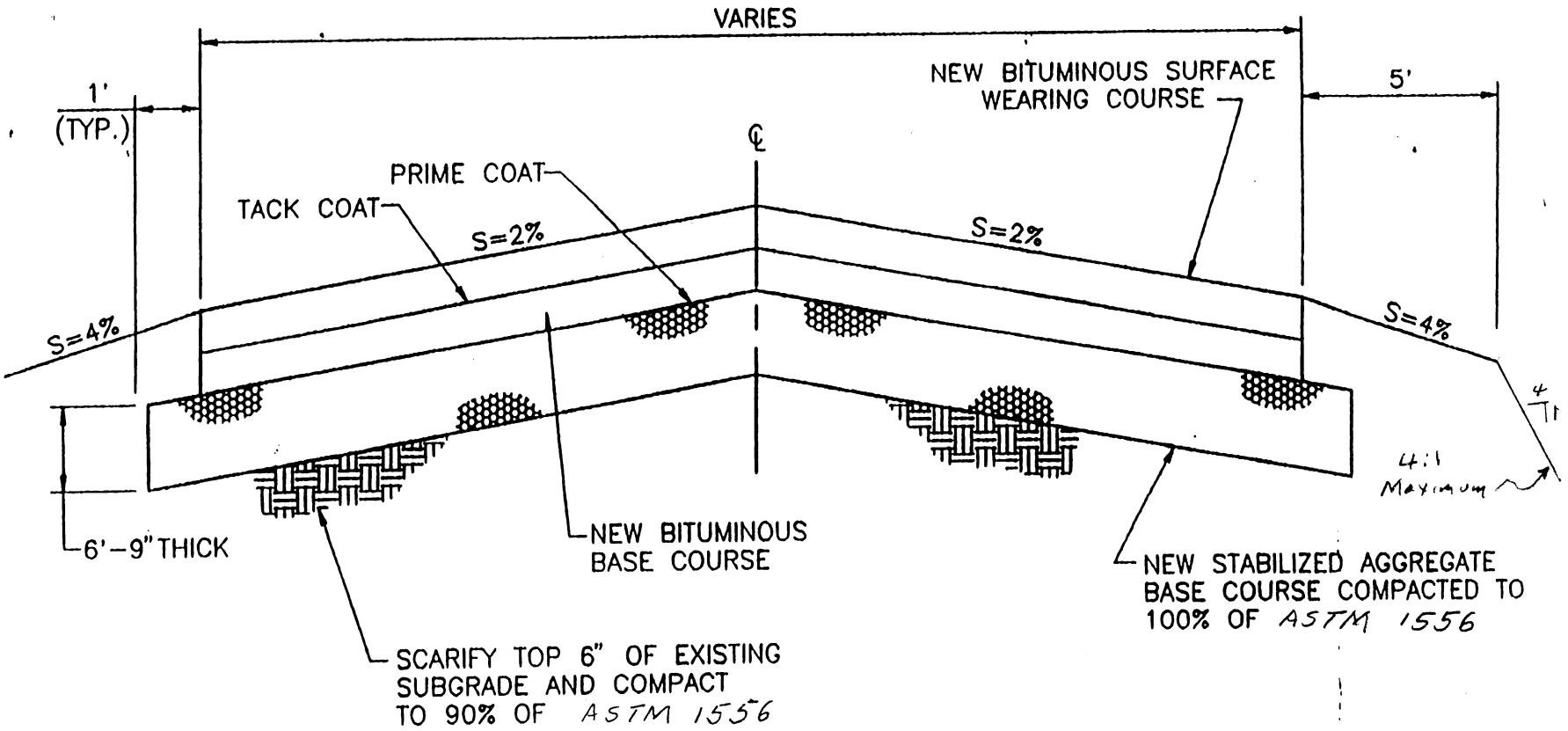


* MATERIAL 2 IS OF A HIGHER QUALITY THAN MATERIAL 1.

PAVEMENT	COMBINATION OF SUBBASE, BASE AND SURFACE CONSTRUCTED ON SUBGRADE
SURFACE COURSE	A HOT MIXED BITUMINOUS CONCRETE DESIGNED AS A STRUCTURAL MEMBER WITH WEATHER AND ABRASION RESISTING PROPERTIES. MAY CONSIST OF WEARING AND INTERMEDIATE COURSES.
PRIME COAT	APPLICATION OF A LOW VISCOSITY LIQUID BITUMEN TO THE SURFACE OF THE BASE COURSE. THE PRIME PENETRATES INTO THE BASE AND HELPS BIND IT TO THE OVERLYING BITUMINOUS COURSE.
SEAL COAT	A THIN BITUMINOUS SURFACE TREATMENT CONTAINING AGGREGATE USED TO WATERPROOF AND IMPROVE THE TEXTURE OF THE SURFACE COURSE.
COMPACTED SUBGRADE	UPPER PART OF THE SUBGRADE WHICH IS COMPACTED TO A DENSITY GREATER THAN THE SOIL BELOW.
TACK COAT	A LIGHT APPLICATION OF LIQUID OR EMULSIFIED BITUMEN ON AN EXISTING PAVED SURFACE TO PROVIDE A BOND WITH THE SUPER-IMPOSED BITUMINOUS COURSE.
SUBGRADE	NATURAL IN-PLACE SOIL OR FILL MATERIAL.

REFERENCE: NAVY DM 21.3; ARMY TM 5-825-2; AIR FORCE AFM 88-6, CHAPTER 2, FLEXIBLE PAVEMENT DESIGN FOR AIRFIELDS

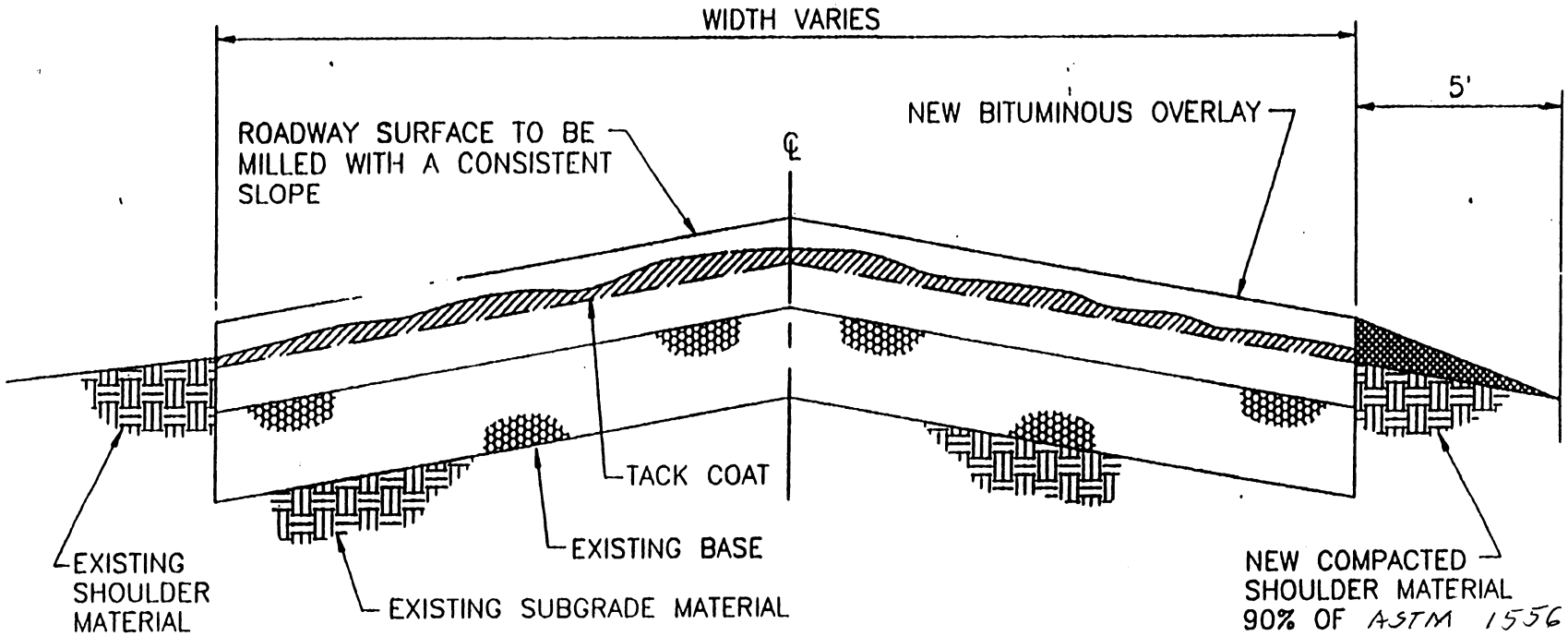
TYPICAL FLEXIBLE PAVEMENT STRUCTURE AND TERMINOLOGY	DATE AUG 1978	



NOTE:
GRADE NEW SHOULDERS AS SPECIFIED
AND COMPACT TO 85% OF ASTM 1556

NEWLY CONSTRUCTED ASPHALT ROADWAY X-SECTION

NOT TO SCALE **Revised in accordance with amendment No. 0002**

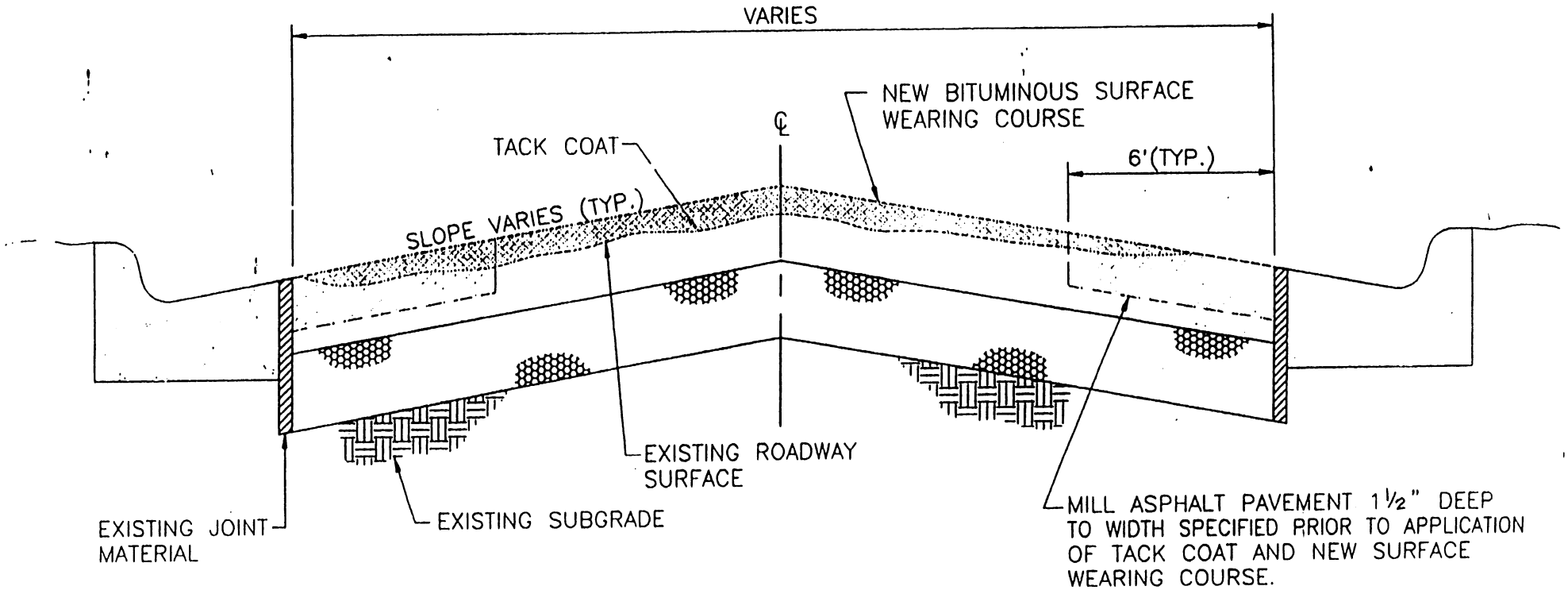


NOTE:

GRADE SHOULDER MATERIAL TO LEVEL OF MILLED ASPHALT SURFACE PRIOR TO APPLICATION OF ASPHALT OVERLAY.

OVERLAY X-SECTION (MILLED SURFACE & NO CURB)

NOT TO SCALE **Revised in accordance with amendment No. 0002**



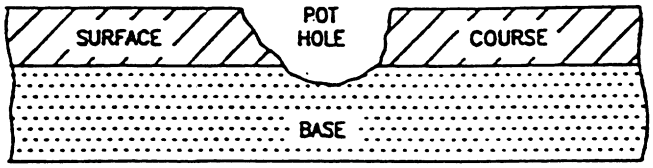
NOTE:

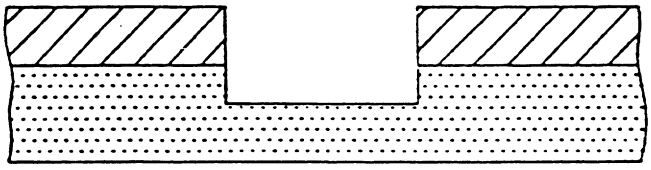
THICKNESS OF OVERLAY SPECIFIED BY EXISTING FIELD CONDITIONS WILL BE MEASURED AT THE ℄ OF THE ROADWAY.

OVERLAY OF ROADWAY (MILLED SECTION, CURB & NO GEOTEXTILE)

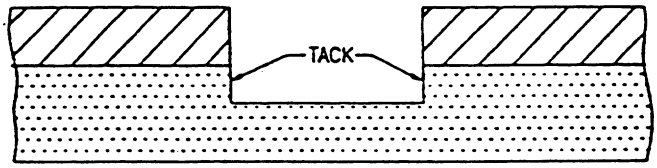
NOT TO SCALE

REPAIR OF POTHOLES

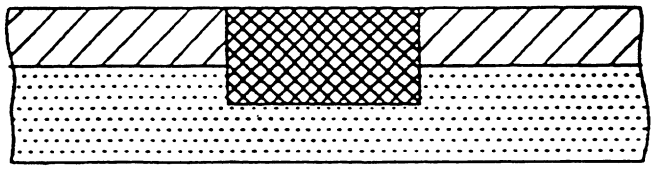




STEP 1: TRIM (VERTICAL SIDES) TO FIRM MATERIAL AND COMPACT



STEP 2: TACK COAT SIDES OF PATCH

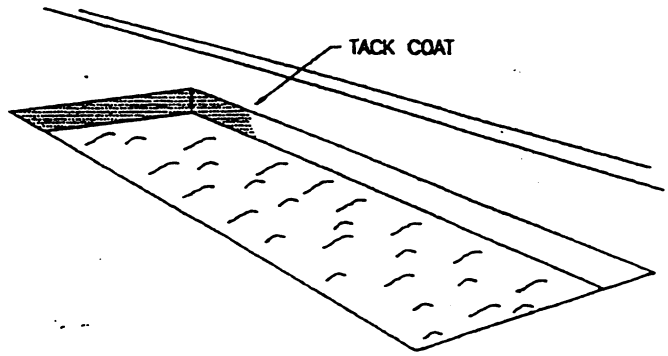


STEP 3: PLACE HOT ASPHALT MIX IN LAYERS NOT TO EXCEED 3 IN; COMPACT AND LEVEL TO SPECIFIED GRADE AND DENSITY

REFERENCE: THE ASPHALT INSTITUTE MANUAL SERIES MS-16 ASPHALT IN PAVEMENT MAINTENANCE

REPAIR OF FLEXIBLE PAVEMENTS (POTHOLES)	DATE JAN 1987	

DEEP PATCH REPAIR

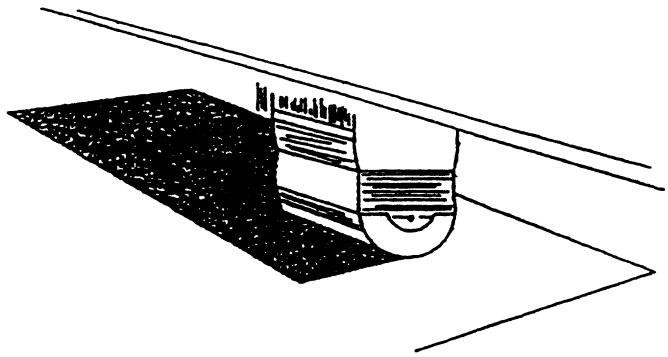


REMOVE SURFACE AND BASE AS NECESSARY TO FIRM MATERIAL AND COMPACT.

CUT STRAIGHT & VERTICAL FACES (PAVEMENT SAW)

APPY TACK COAT VERTICAL FACES

HOT ASPHALT MIX PLACED DIRECTLY ON SUBGRADE NEEDS NO PRIME; PLACE IN LAYERS NOT TO EXCEED 3 IN.



BACKFILL AND COMPACT USING HOT ASPHALT MIX

VIBRATORY PLATE COMPACTOR (SM PATCHES)

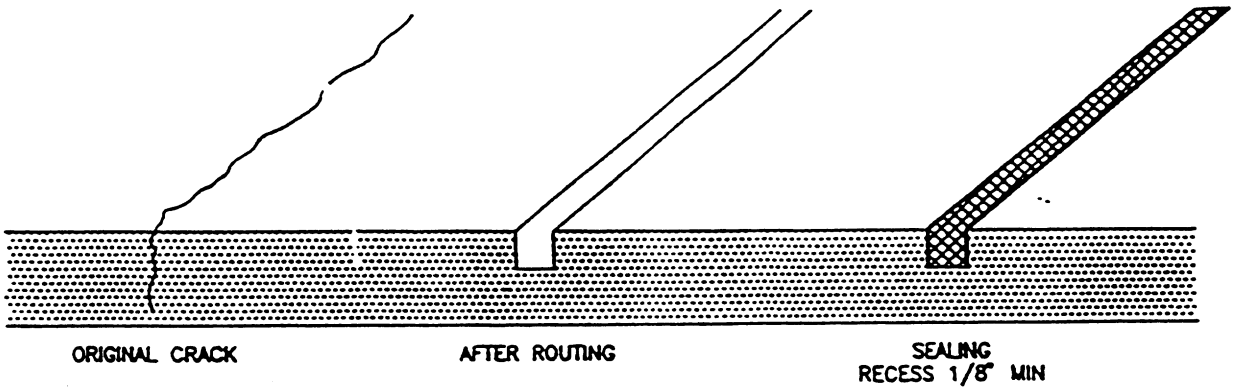
ROLLER COMPACTOR (LARGE PATCHES)

COMPACT TO SAME GRADE AS SURROUNDING PAVEMENT AND MEET DENSITY REQUIREMENTS

REFERENCE: THE ASPHALT INSTITUTE MANUAL SERIES MS-16 ASPHALT IN PAVEMENT MAINTENANCE

REPAIR OF FLEXIBLE PAVEMENTS (DEEP PATH)	DATE JAN 1987	

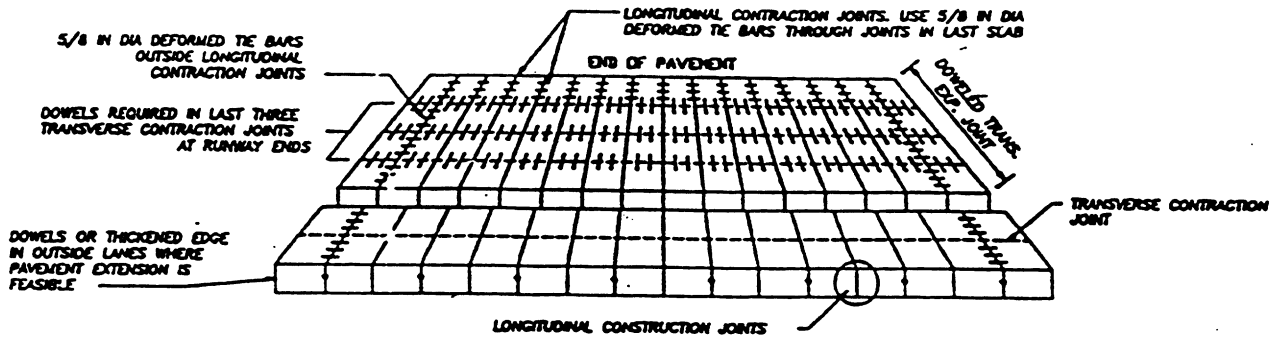
CRACK REPAIR



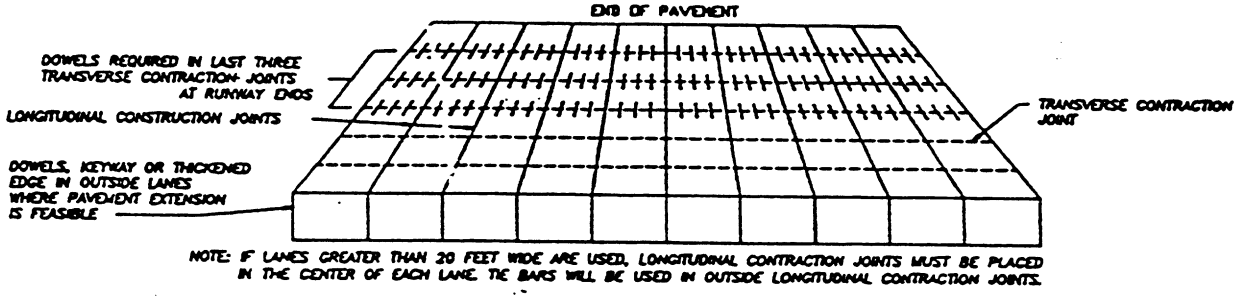
THE VARIABLE WIDTH AND AMOUNT OF SPALLING FOUND IN CRACKS NECESSITATES DIFFERENT PROCEDURES FOR REPAIR

REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

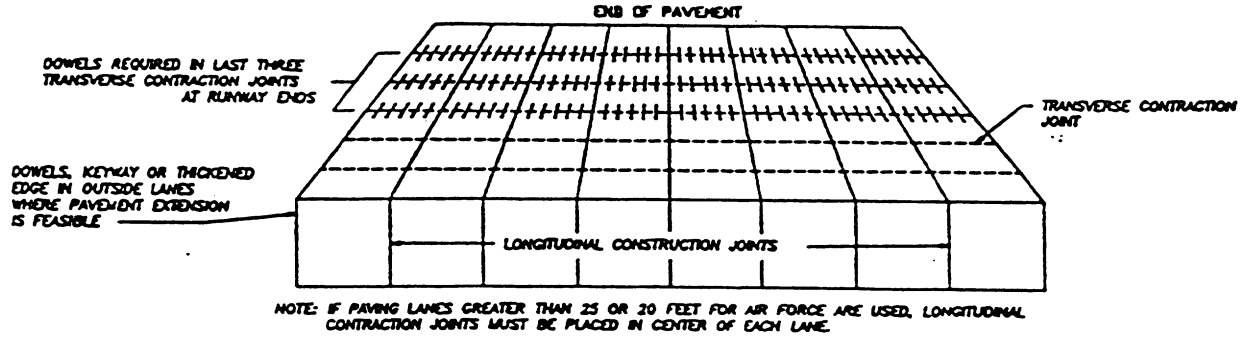
REPAIR OF CONCRETE PAVEMENTS (CRACK)	DATE JAN 1978	



PAVEMENT THICKNESS LESS THAN 9 INCHES



PAVEMENT THICKNESS, 9 TO 12 INCHES

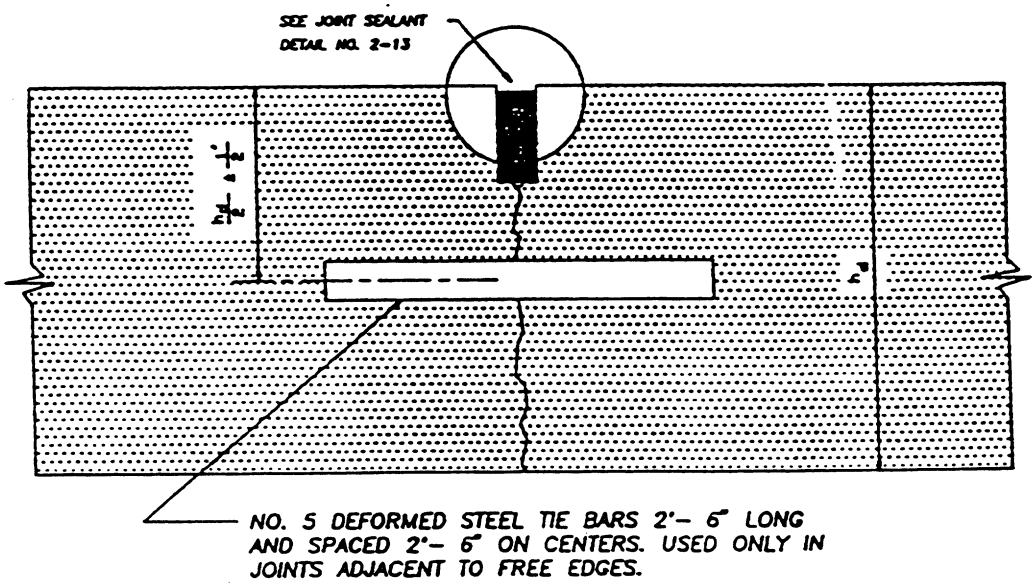


PAVEMENT THICKNESS GREATER THAN 12 INCHES

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3,
RIGID PAVEMENTS FOR AIRFIELDS

TYPICAL JOINTING - PLAIN CONCRETE PAVEMENT	DATE AUG 1988	

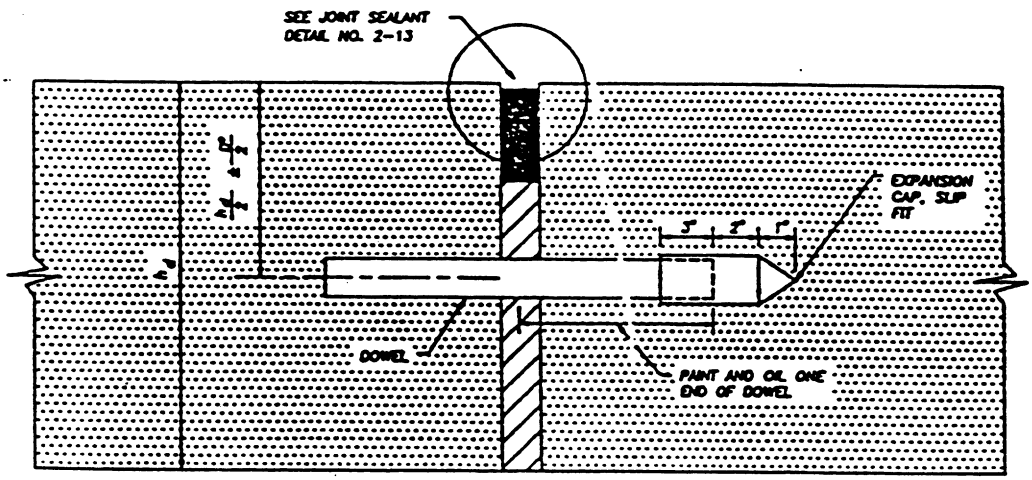
LONGITUDINAL



REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3,
RIGID PAVEMENTS FOR AIRFIELDS

CONTRACTION JOINT (LONGITUDINAL) FOR PLAIN CONCRETE PAVEMENTS	DATE AUG 1988	

TRANSVERSE



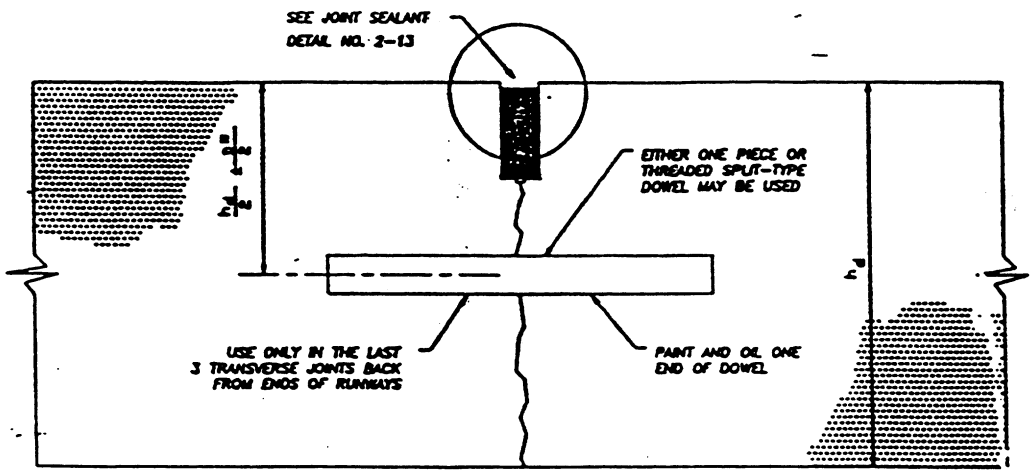
D" DENOTES DOWEL DIAMETER

PAVEMENT THICKNESS IN.	MINIMUM DOWEL LENGTH IN.	MAXIMUM DOWEL SPACING IN.	DOWEL DIAMETER AND TYPE
<8	16	12	3/4-IN. BAR
8 TO 11.5	16	12	1-IN. BAR
12 TO 15.5	20	15	1-TO 1-1/4-IN. BAR, OR 1-IN. EXTRA-STRENGTH PIPE
16 TO 20.5	20	18	1-TO 1-1/2-IN. BAR, OR 1-TO 2-1/2-IN. EXTRA-STRENGTH PIPE
21 TO 25.5	24	18	2-INCH BAR, OR 2-INCH EXTRA STRENGTH PIPE
>26	30	18	3-INCH BAR, OR 3-INCH EXTRA STRENGTH PIPE

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

EXPANSION JOINT (TRANSVERSE) FOR PLAIN CONCRETE PAVEMENTS	DATE AUG 1988	FIGURE 2-20

TRANSVERSE



D* DENOTES DOWEL DIAMETER

PAVEMENT THICKNESS, INCHES	SPACING,FEET
LESS THAN 9	12-1/2 TO 15
9 TO 12	15 TO 20
OVER 12*	20 TO 25

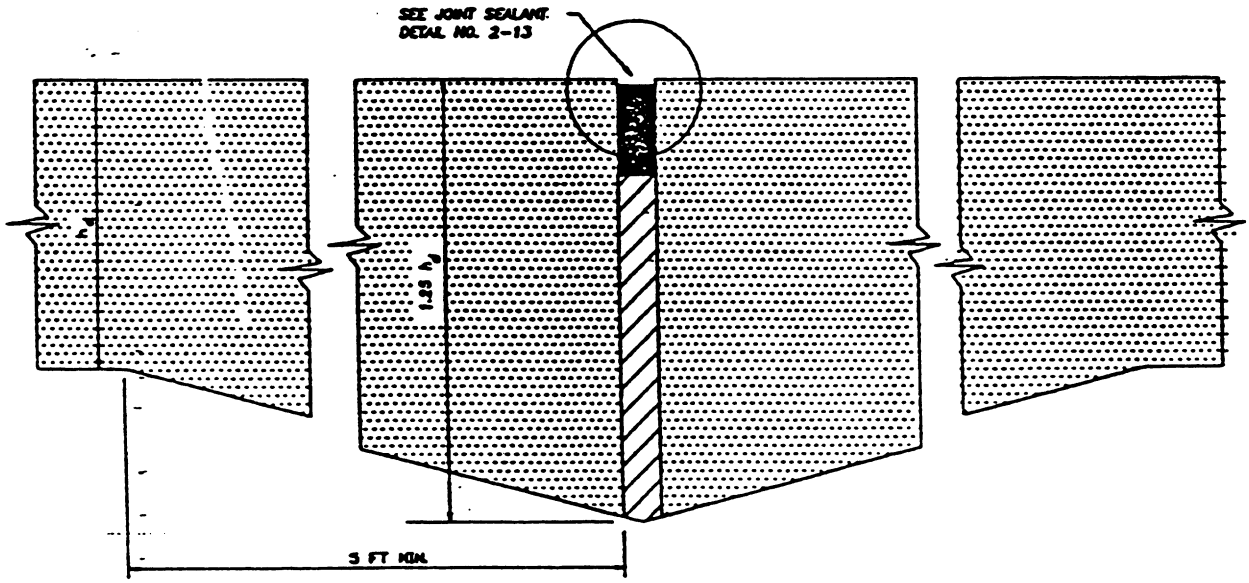
* 20-FOOT MAXIMUM SPACING FOR AIR FORCE PAVEMENTS.

PAVEMENT THICKNESS IN.	MINIMUM DOWEL LENGTH IN.	MAXIMUM DOWEL SPACING IN.	DOWEL DIAMETER AND TYPE
<8	16	12	3/4-IN. BAR
8 TO 11.5	16	12	1-IN. BAR
12 TO 15.5	20	15	1-TO 1-1/4-IN. BAR, OR 1-IN. EXTRA-STRENGTH PIPE
16 TO 20.5	20	18	1-TO 1-1/2-IN. BAR, OR 1-TO 1-1/2-IN. EXTRA-STRENGTH PIPE
21 TO 25.5	24	18	2-INCH BAR, OR 2-INCH EXTRA STRENGTH PIPE
>26	30	18	3-INCH BAR, OR 3-INCH EXTRA STRENGTH PIPE

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

CONTRACTION JOINT (TRANSVERSE) FOR PLAIN CONCRETE PAVEMENTS	DATE AUG 1988	

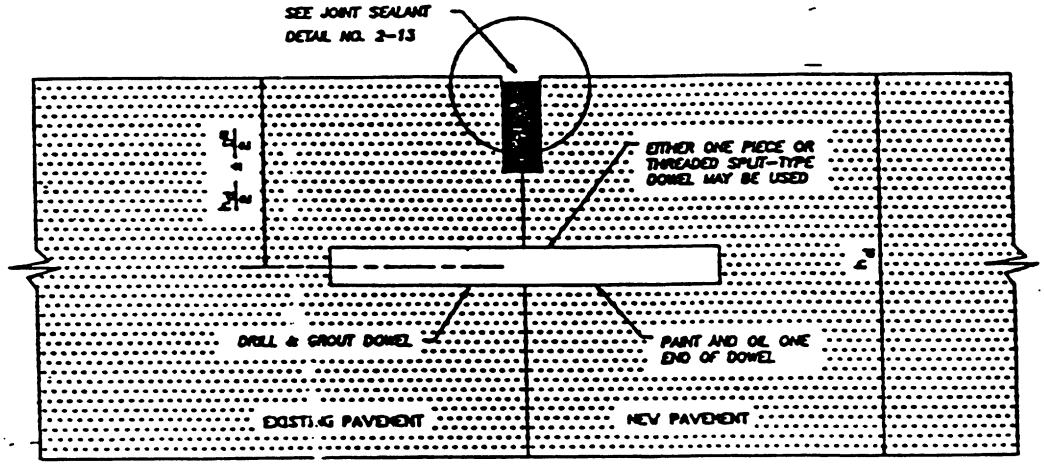
LONGITUDINAL OR TRANSVERSE



REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3,
RIGID PAVEMENTS FOR AIRFIELDS

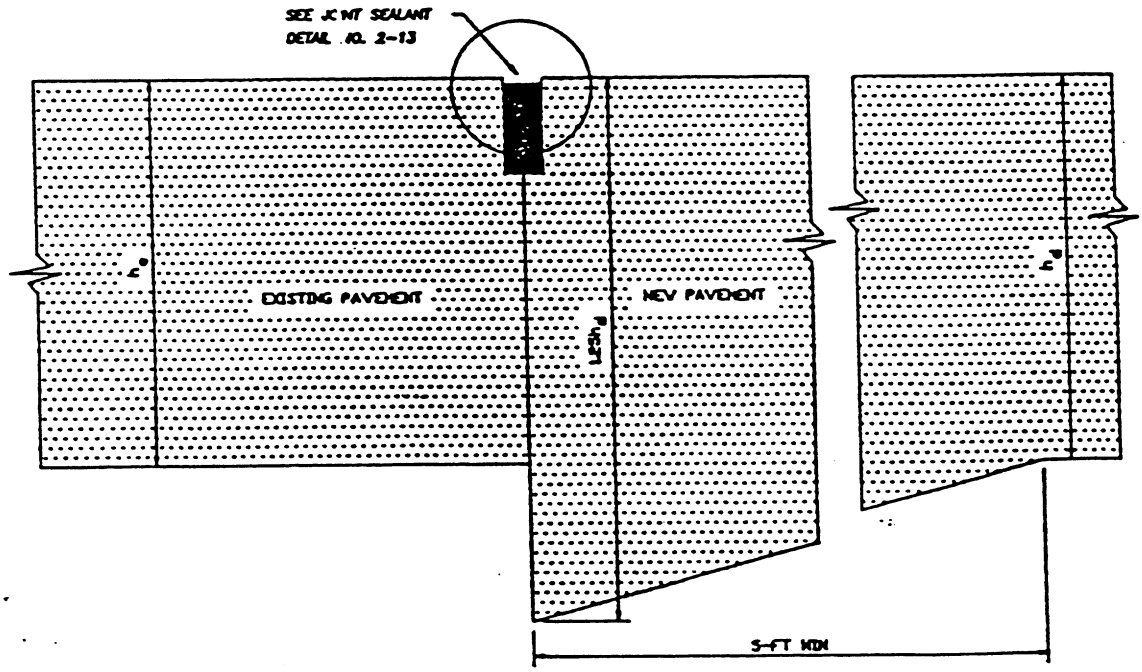
EXPANSION JOINT (LONGITUDINAL) FOR PLAIN CONCRETE PAVEMENTS	DATE AUG 1988	

(A) DOWELED



D* DENOTES DOWEL DIAMETER

(E) THICKENED EDGE *

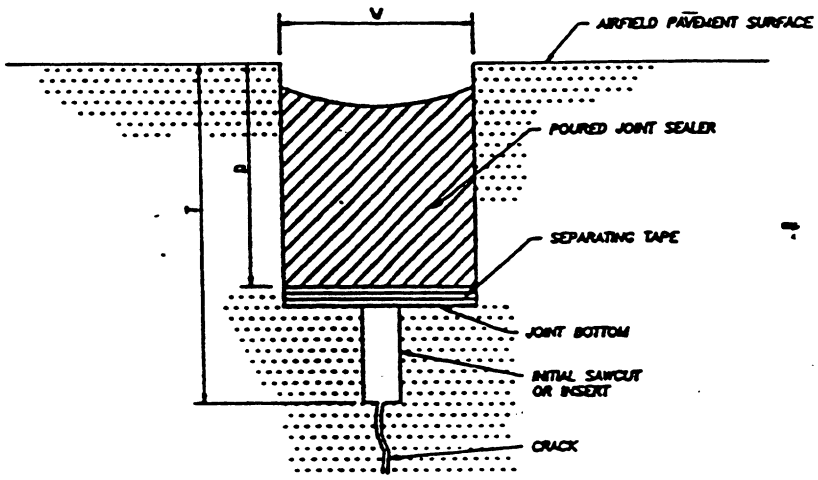


* NOTE : THIS TYPE JOINT SHOULD BE USED ONLY WHEN EXISTING PAVEMENT IS TO BE REPLACED IN A SHORT PERIOD OF TIME, SINCE WITHOUT LOAD TRANSFER IT WILL DETERIORATE QUICKLY !

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

CONSTRUCTION JOINTS (DOWELED AND THICKENED EDGE) BETWEEN NEW AND EXISTING PLAIN CONCRETE PAVEMENTS	DATE AUG 1988	

SEPARATING TAPE



V = WIDTH OF SEALANT RESERVOIR (SEE TABLE)
D = DEPTH OF SEALANT (1.0 TO 1.5 x V)
T = DEPTH OF INITIAL SAWCUT
  a. 1/4 SLAB THICKNESS FOR PAVEMENTS LESS THAN 12 INCHES
  b. 3 INCHES FOR PAVEMENTS 12-18 INCHES *
  c. 1/6 SLAB THICKNESS FOR PAVEMENTS MORE THAN 18 INCHES *

* DESIGNER MAY WANT TO CONSIDER REQUIRING 1/4 SLAB THICKNESS

TABLE

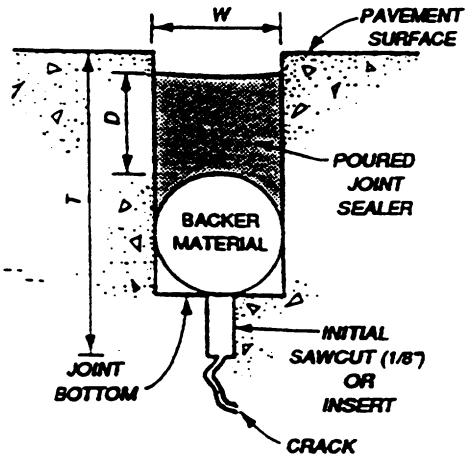
JOINT SPACING FT	WIDTH, IN. MIN	MAX
< 25	1/2	5/8
25-50	3/4	7/8
> 50	1.0	1-1/8

NOTES :
1. SEPARATING TAPE OR NONABSORBENT TAPE REQUIRED TO PREVENT JOINT SEALANT FROM FLOWING INTO SAWCUT, TO SEPARATE NONCOMPATABLE MATERIALS AND TO PREVENT JOINT SEALANTS FROM BONDING TO BOTTOM OF RESERVOIR.
2. TOP OF SEALANT WILL BE 1/8-IN. TO 1/4-IN. BELOW TOP OF PAVEMENT.
3. COMPRESSION SEAL MUST BE IN COMPRESSION AT ALL TIMES.

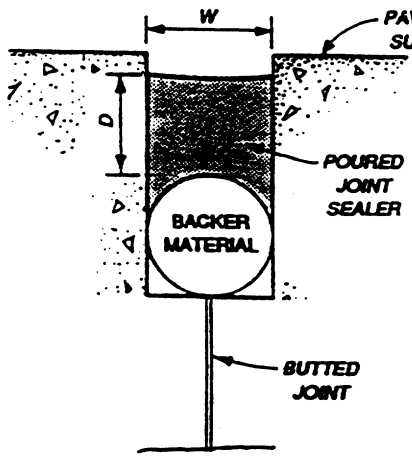
REFERENCE : TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

JOINT SEALANT DETAILS FOR AIRFIELD PAVEMENTS (SEPARATING TAPE)	DATE AUG 1988	

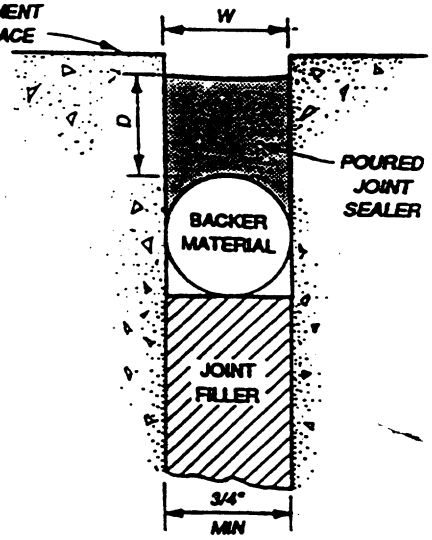
CONTRACTION JOINT



CONSTRUCTION JOINT



EXPANSION JOINT



W = WIDTH OF SEALANT RESERVOIR (SEE TABLE)
D = DEPTH OF SEALANT (1.0 TO 1.5 X W)
T = DEPTH OF INITIAL SAWCUT OR INSERT TYPE JOINT FORMER (CONTRACTION JOINT)
a. 1/4 SLAB THICKNESS FOR PAVEMENTS LESS THAN 12 INCHES
b. 3 INCHES FOR PAVEMENTS 12-18 INCHES*
c. 1/6 SLAB THICKNESS FOR PAVEMENTS MORE THAN 18 INCHES*

TABLE

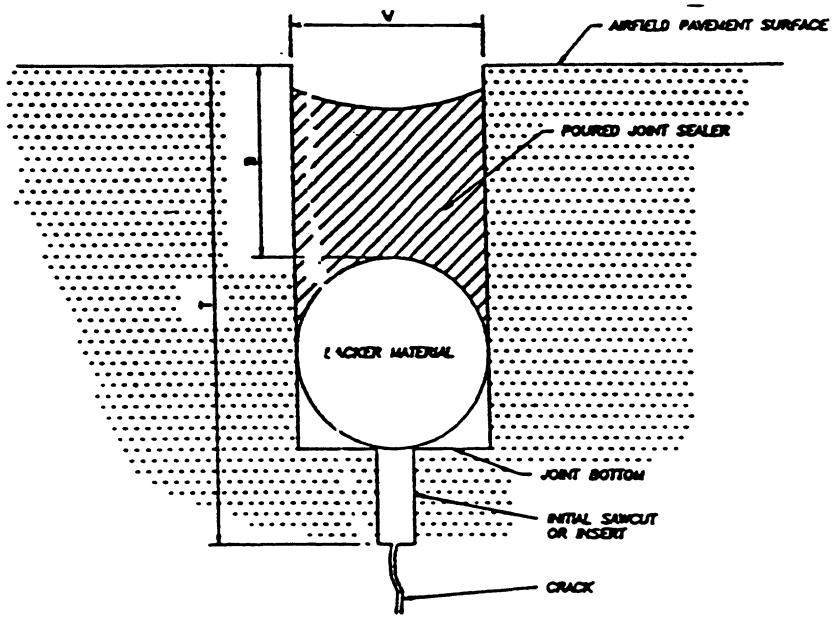
JOINT SPACING FT	WIDTH, IN.	
	MIN	MAX
<25	1/2	5/8
25 - 50	3/4	7/8
>50	1.0	1-1/8

NOTE. SOME SINGLE COMPONENT COLD APPLIED SEALANTS REQUIRE A SHAPE FACTOR (D/W) OF LESS THAN 1 TO PERFORM PROPERLY. IN THESE CASES, THE SHAPE FACTOR SHALL BE PER MANUFACTURER'S RECOMMENDATION.

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

POURED JOINT SEALANT DETAILS (BACKER MATERIAL) (FOR RIGID PAVEMENT)	DATE AUG 1988	

BACKER MATERIAL



V = WIDTH OF SEALANT RESERVOIR (SEE TABLE)
D = DEPTH OF SEALANT (1.0 TO 1.5 x V)
T = DEPTH OF INITIAL SAWCUT
  a. 1/4 SLAB THICKNESS FOR PAVEMENTS LESS THAN 12 INCHES
  b. 3 INCHES FOR PAVEMENTS 12-18 INCHES ■
  c. 1/6 SLAB THICKNESS FOR PAVEMENTS MORE THAN 18 INCHES ■

■ DESIGNER MAY WANT TO CONSIDER REQUIRING 1/4 SLAB THICKNESS

TABLE

JOINT SPACING FT	WIDTH, IN. MIN	WIDTH, IN. MAX
< 25	1/2	5/8
25-50	3/4	7/8
> 50	1.0	1-1/8

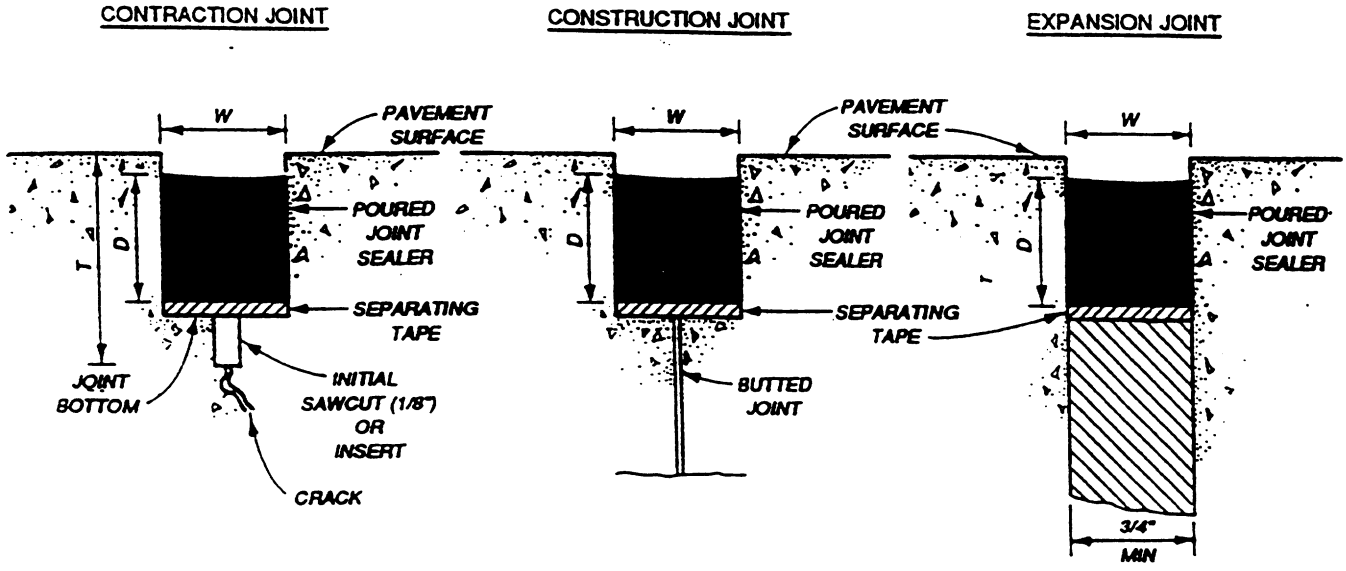
NOTES : 1. SEPARATING TAPE OR NONABSORBENT TAPE REQUIRED TO PREVENT JOINT SEALANT FROM FLOWING INTO SAWCUT, TO SEPARATE NONCOMPATABLE MATERIALS AND TO PREVENT JOINT SEALANTS FROM BONDING TO BOTTOM OF RESERVOIR.

2. TOP OF SEALANT WILL BE 1/8-IN. TO 1/4-IN. BELOW TOP OF PAVEMENT.

3. COMPRESSION SEAL MUST BE IN COMPRESSION AT ALL TIMES.

REFERENCE : TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

JOINT SEALANT DETAILS (BACKER MATERIAL) FOR AIRFIELD PAVEMENT	DATE AUG 1988	FIGURE 2-13a



W = WIDTH OF SEALANT RESERVOIR (SEE TABLE)
D = DEPTH OF SEALANT (1.0 TO 1.5 X W)
T = DEPTH OF INITIAL SAWCUT OR INSERT TYPE JOINT FORMER (CONTRACTION JOINT)
a. 1/4 SLAB THICKNESS FOR PAVEMENTS LESS THAN 12 INCHES
b. 3 INCHES FOR PAVEMENTS 12-18 INCHES
c. 1/6 SLAB THICKNESS FOR PAVEMENTS MORE THAN 18 INCHES

TABLE

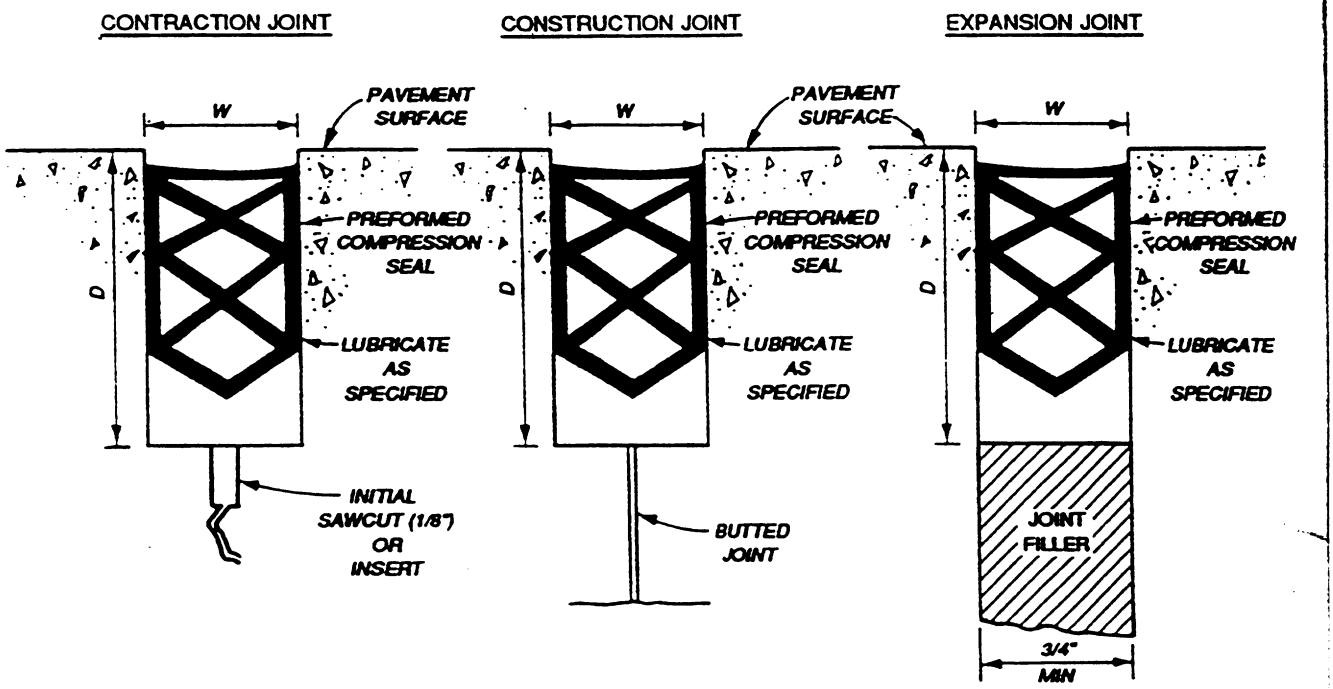
JOINT SPACING FT	WIDTH, IN. MIN	MAX
<25	1/2	5/8
25 - 50	3/4	7/8
>50	1.0	1-1/8

NOTE: SOME SINGLE COMPONENT COLD APPLIED SEALANTS REQUIRE A SHAPE FACTOR (D/W) OF LESS THAN 1 TO PERFORM PROPERLY. IN THESE CASES, THE SHAPE FACTOR SHALL BE PER MANUFACTURER'S RECOMMENDATION.

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

POURED JOINT SEALANT DETAILS FOR RIGID PAVEMENTS (SEPARATING TAPE)	DATE AUG 1988	

PREFORMED COMPRESSION SEAL



DEPTH & WIDTH: AS RECOMMENDED BY MANUFACTURER PER TYPE OF SEAL BEING USED, (DEPTH NOT LESS THAN 1.5 INCHES)

TOP OF PREFORMED SEAL WILL BE 1/8 - 1/4 INCH BELOW PAVEMENT SURFACE

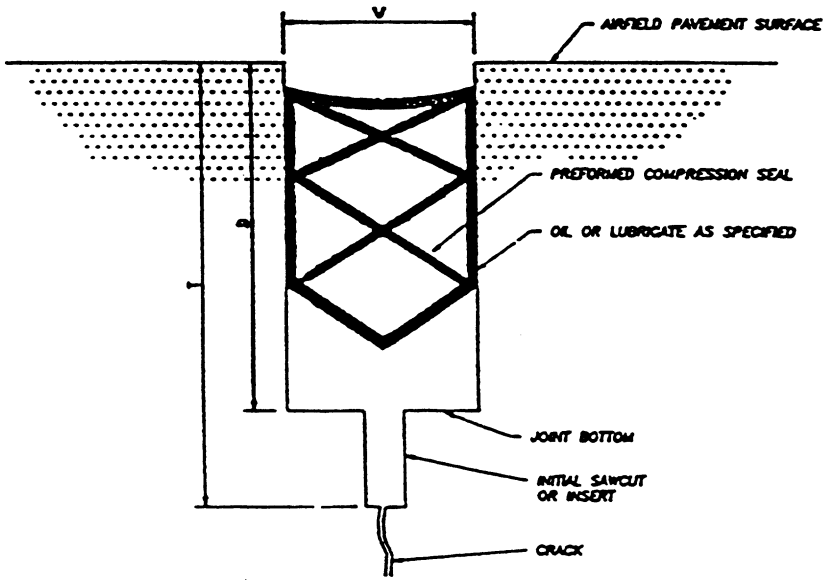
COMPRESSION SEAL MUST BE IN COMPRESSION AT ALL TIMES.

JOINT SPACING FT	WIDTH-IN.	
	MIN.	MAX.
<25	1/2	5/8
25 - 50	3/4	7/8
>50	1.0	1-1/8

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

JOINT SEALANT DETAILS (PREFORMED COMPESSION SEAL) FOR RIGID PAVEMENT	DATE JULY 1986	

PREFORMED COMPRESSION SEAL



DEPTH & WIDTH : AS RECOMMENDED BY MANUFACTURER PER TYPE OF SEAL BEING USED. (DEPTH NOT LESS THAN 1.5 INCHES)

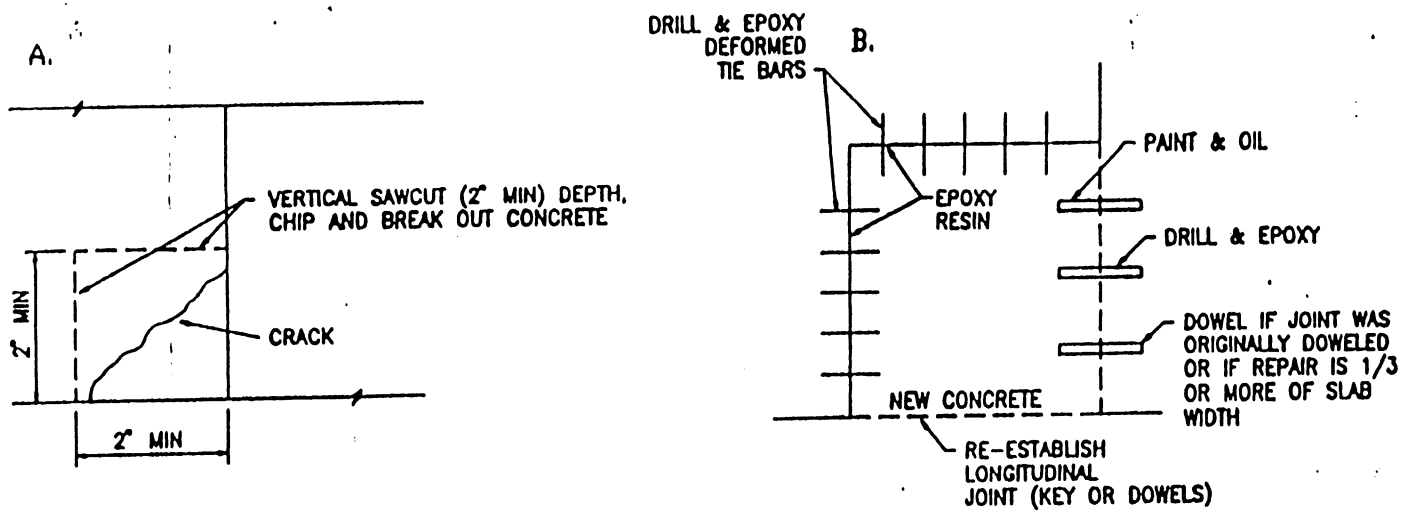
TOP OF PREFORMED SEAL WILL BE 1/8 - 1/4 INCH BELOW PAVEMENT SURFACE

COMPRESSION SEAL MUST BE IN COMPRESSION AT ALL TIMES.

REFERENCE : TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

JOINT SEALANT DETAILS (PREFORMED COMPRESSION SEAL)	DATE JULY 1988	

FULL DEPTH REPAIR



REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

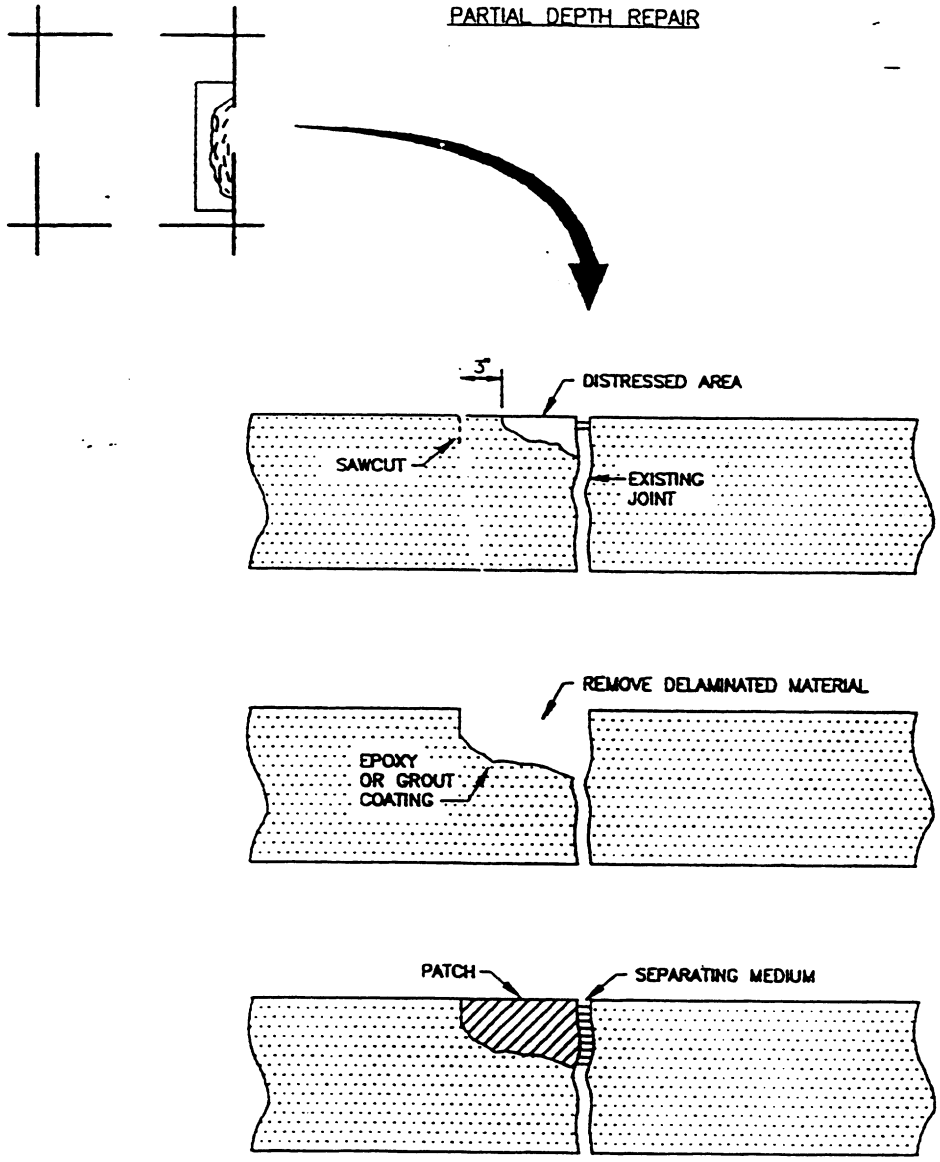
TM 5-822-9/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS DATED AUGUST 1988 FOR DOWEL AND TIE BAR SIZE AND SPACING

ACI 503R-80, "USE OF EPOXY COMPOUNDS WITH CONCRETE" FOR GUIDANCE ON BONDING UNHARDENED CONCRETE TO HARDENED CONCRETE.

REPAIR OF CONCRETE PAVEMENTS (FULL DEPTH)

DATE
JAN 1978

PARTIAL DEPTH REPAIR

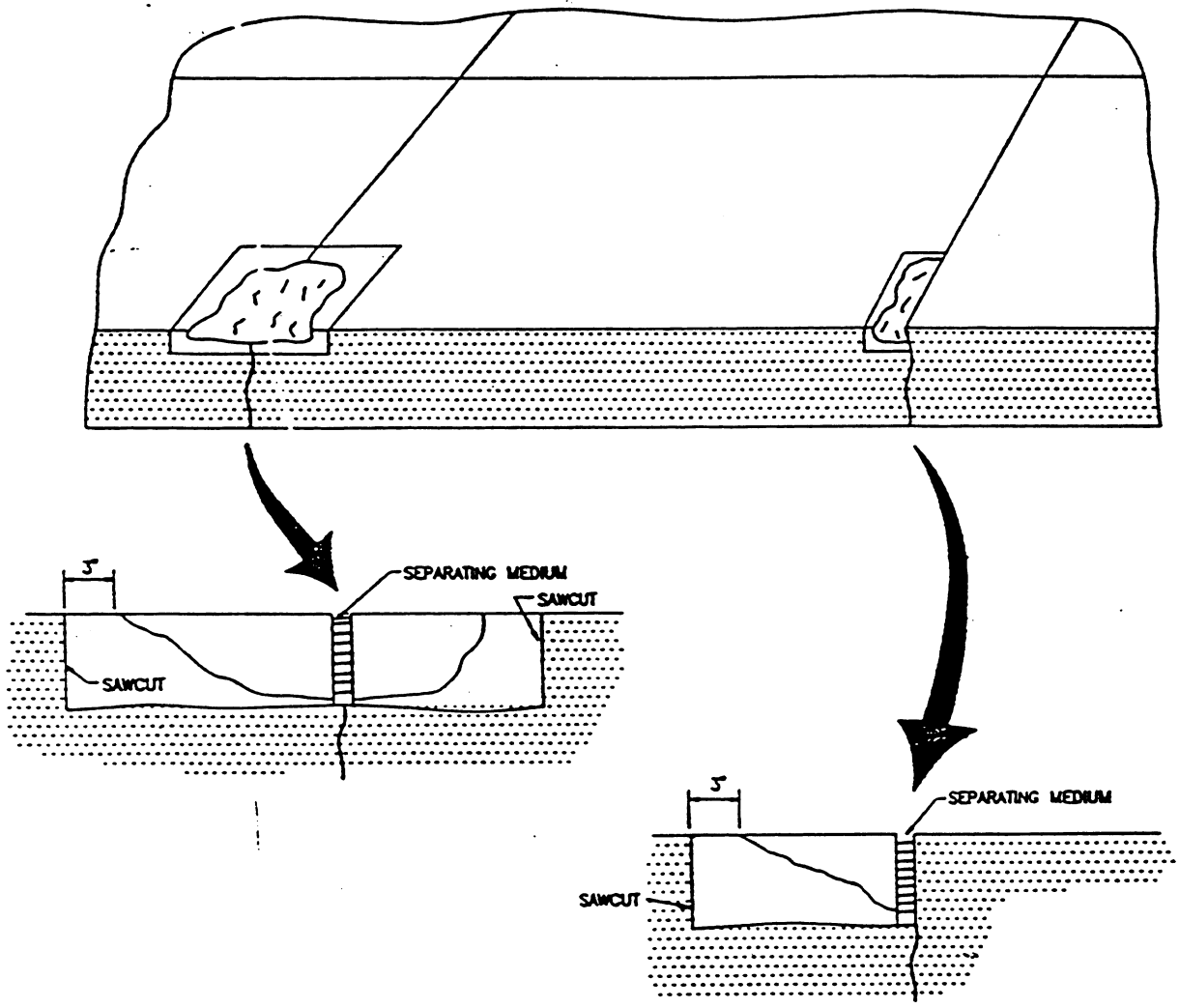


MAKE VERTICAL SAWCUT 2" DEEP APROX. 3" FROM DISTRESSED AREA
REMOVE ALL CONCRETE AND LOOSE MATERIAL WITH IN SAWED AREA
TO SOUND CONCRETE (3" MIN DEPTH)
USE A SEPARATING MEDIUM TO MAINTAIN AND PROTECT JOINT
USE A BONDING AGENT TO INSURE GOOD CONTACT
BETWEEN EXISTING PAVEMENT AND PATCH.
GROUT AND PATCH WITH 2" SLUMP CONCRETE.
AFTER PATCH HAS CURED CLEAN JOINT AND APPLY JOINT SEALANT

REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

REPAIR OF CONCRETE PAVEMENTS (PARTIAL DEPTH)	DATE JAN 1978	

SPALL REPAIR



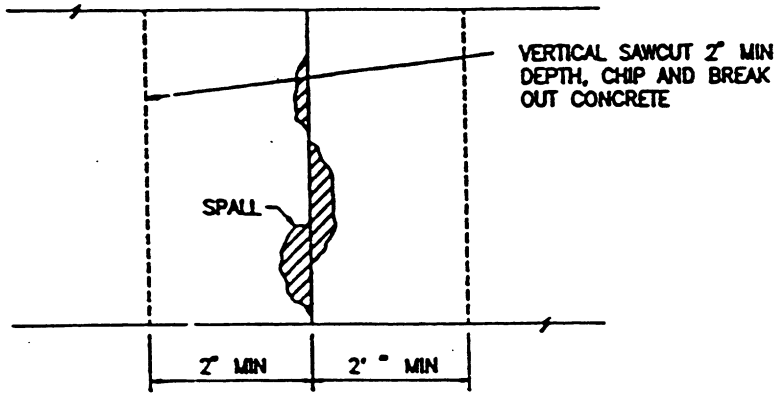
MAKE VERTICAL SAWCUT 2" DEEP APROX. 3" FROM DISTRESSED AREA
REMOVE ALL CONCRETE WITHIN SAWED AREA TO SOUND CONCRETE OR 3" MINIMUM DEPTH TO MAINTAIN AND PROTECT JOINT USE A SEPARATING MEDIUM.
GROUT AND PATCH WITH EPOXY CONCRETE, AFTER CURING CLEAN JOINT AND APPLY JOINT SEALANT.

REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

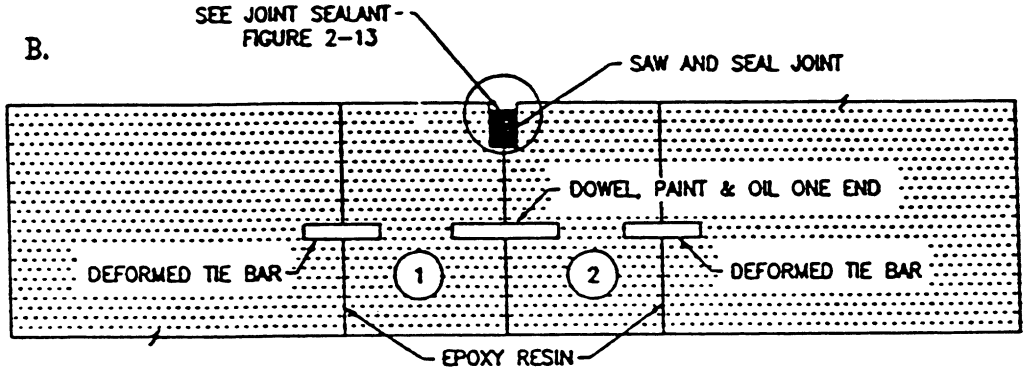
REPAIR OF CONCRETE PAVEMENTS (SPALL)	DATE JAN 1978	

FULL DEPTH REPAIR

A.



B.



(1) – (2) FORM AND PLACE CONCRETE IN ONE REPAIR SECTION AT A TIME

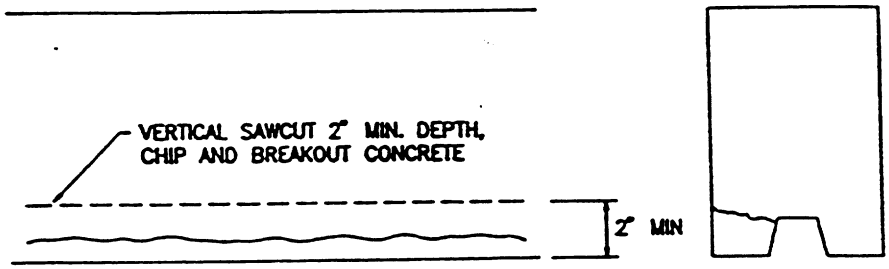
REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

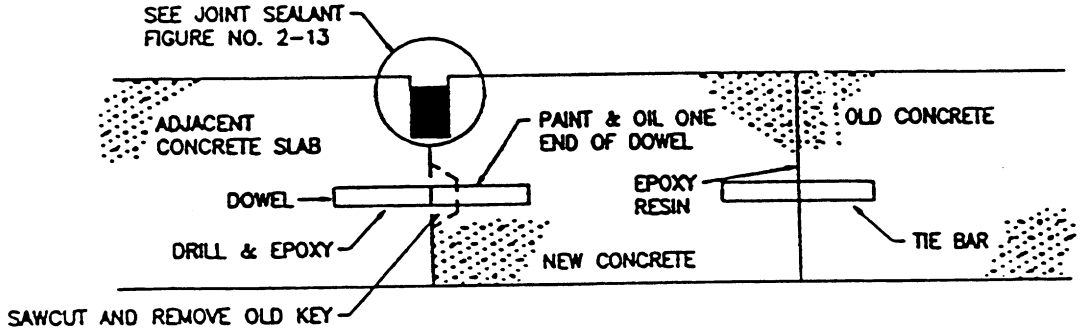
TM 5-822-9/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS DATED AUGUST 1988 FOR DOWEL AND TIE BAR SIZE AND SPACING

ACI 503R-80, "USE OF EPOXY COMPOUNDS WITH CONCRETE" FOR GUIDANCE ON BONDING UNHARDENED CONCRETE TO HARDENED CONCRETE.

REPAIR OF CONCRETE PAVEMENTS (FULL DEPTH)	DATE JAN 1978	

FAILED KEY



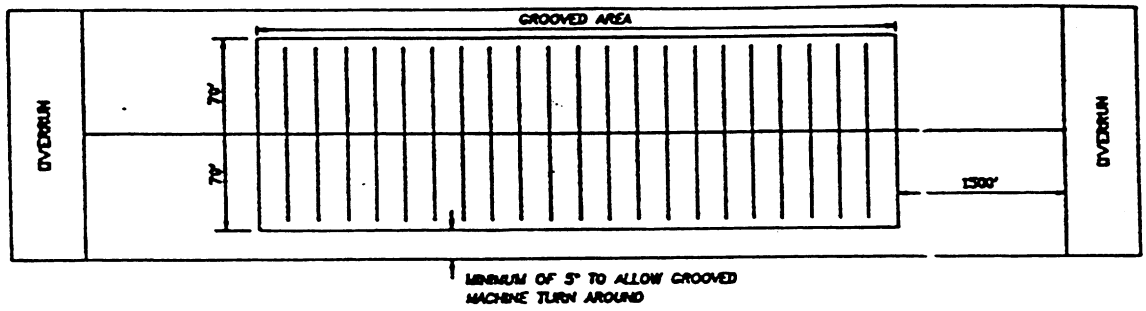


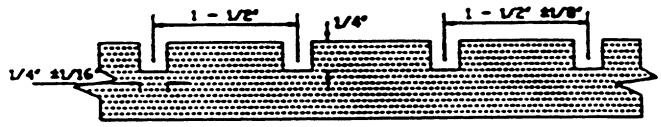
REFERENCE: TM5-822-9/AFM 88-6, CHAPTER 10, REPAIR OF RIGID PAVEMENTS USING EPOXY RESIN GROUTS, MORTARS AND CONCRETE

TM 5-822-9/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS DATED AUGUST 1988 FOR DOWEL AND TIE BAR SIZE AND SPACING

ACI 503R-80, "USE OF EPOXY COMPOUNDS WITH CONCRETE" FOR GUIDANCE ON BONDING UNHARDENED CONCRETE TO HARDENED CONCRETE.

REPAIR OF CONCRETE PAVEMENTS (FAILED KEY)	DATE JAN 1978	

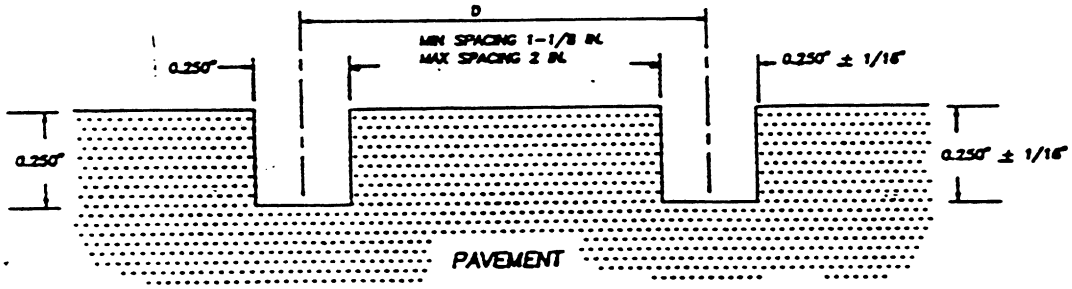




GROOVING DETAIL - PCC

NOTES: GROOVING SHOULD NOT BE ACCOMPLISHED: WITHIN 6 INCHES OF TRANSVERSE JOINTS OR TRANSVERSE WORKING CRACKS: THROUGH NEOPRENE COMPRESSION SEALS (FOR LONGITUDINAL JOINTS, THE TIP OF THE SEAL SHOULD BE 1/8 " BELOW THE BOTTOM OF THE GROOVE): THE FIRST 1500 FEET FROM THE THRESHOLDS: THE FIRST 300 FEET EITHER SIDE OF AN ARREST BARRIER CABLE WHICH REQUIRES HOOK ENGAGEMENT FOR OPERATION: THROUGH IN-RUNNING LIGHTING FIXTURES OR SIMILAR ITEMS. GROOVES SHOULD TERMINATE 5' FROM PAVEMENT EDGE.

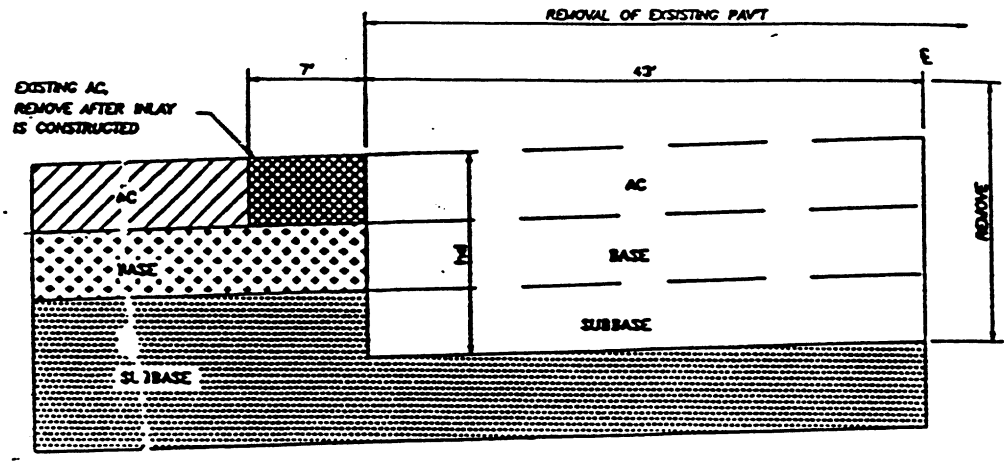
D = 1 - 1/4" ±1/8" - ARMY
1 - 1/2" ±1/8" - AIR FORCE



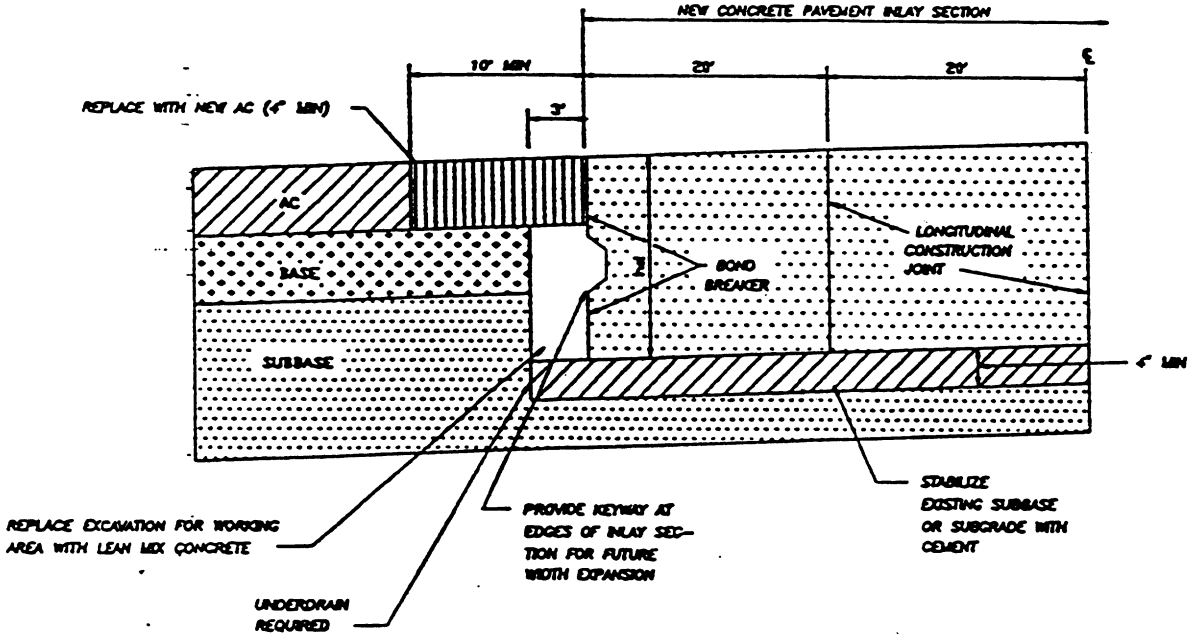
GROOVING DETAIL - AC

REFERENCE: TM 5-824-1/AFM 88-6, CHAPTER 1, GENERAL PROVISIONS FOR AIRFIELD PAVEMENT DESIGN.
TM 5-825.2, FLEXIBLE PAVEMENT DESIGN

GROOVING DETAILS FOR RUNWAY PAVEMENTS	DATE JUNE 1987	



A. TRANSVERSE SECTION SHOWING REMOVAL



B. TRANSVERSE SECTION SHOWING CONSTRUCTION

REFERENCE: TM 5-825-3/AFM 88-6, CHAPTER 3, RIGID PAVEMENTS FOR AIRFIELDS

TYPICAL CONCRETE PAVEMENT INLAY IN EXISTING FLEXIBLE PAVEMENT	DATE AUG 1988	

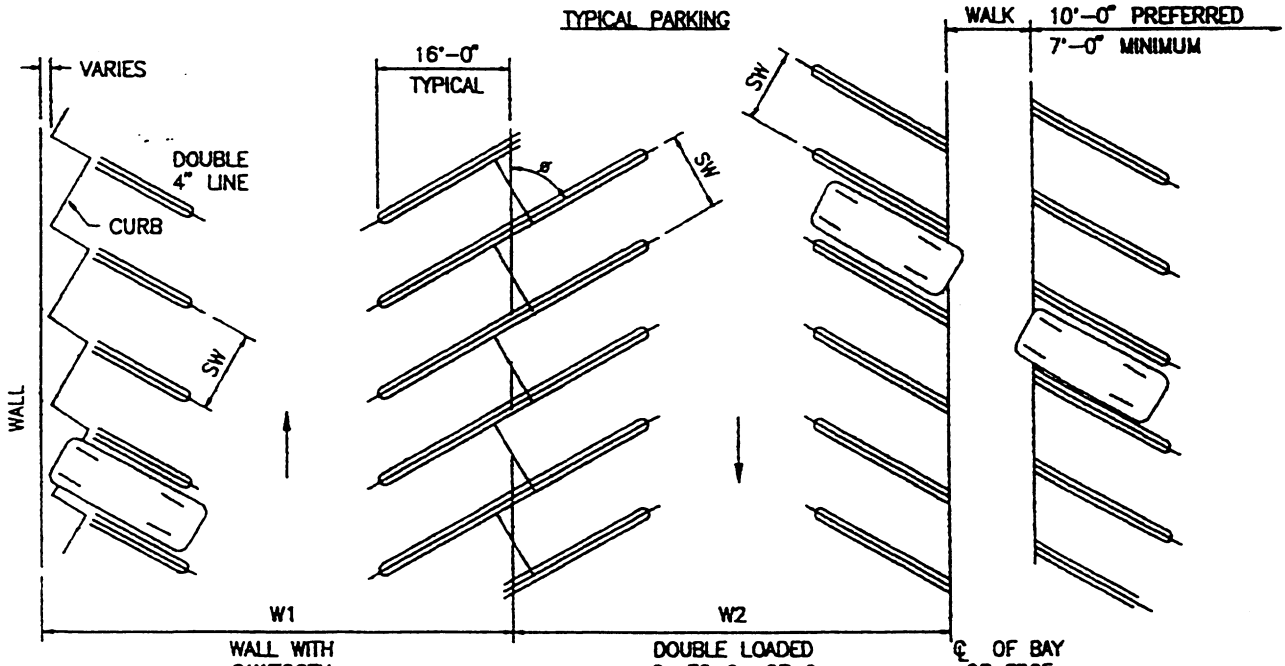
CAR PARKING DIMENSIONS

RECOMMENDED RANGE OF CAR STALL WIDTH (SW)

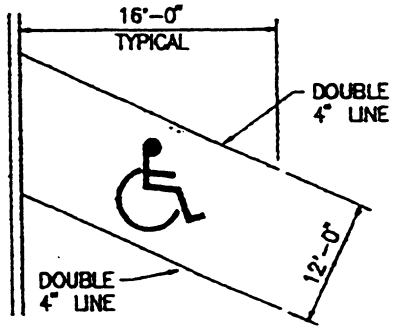
WIDTH (FT)	8	9	10	11	12
SMALL CAR USE	■				
ALL DAY PARKER USE		■			
STANDARD CAR USE		■			
LUXURY AND ELDERLY USE			■		
SUPERMARKET AND CAMPER USE			■		
HANDICAPPED USE*					■

*MINIMUM REQUIREMENTS = 2 PER 100 STALLS AS SPECIFIED BY FEDERAL LAW; PLACE CONVENIENT TO DESTINATION

TYPICAL PARKING



DRIVEWAY WIDTHS					
SW	W	45°	60°	90°	VEHICLE TYPE
8'-0"	1	38'-9"	44'-2"	57'-2"	SMALL CARS
	2	36'-8"	42'-9"	57'-2"	
8'-6"	1	47'-8"	54'-0"	66'-0"	STANDARD CARS
	2	45'-2"	51'-8"	66'-0"	
9'-0"	1	46'-4"	53'-10"	66'-0"	STANDARD CARS
	2	44'-8"	51'-6"	66'-0"	
9'-0"	1	47'-9"	53'-8"	66'-0"	LARGE CARS
	2	45'-5"	51'-8"	66'-0"	
9'-6" & 10'-0"	1	47'-7"	52'-4"	66'-0"	LARGE CARS
	2	45'-3"	50'-8"	66'-0"	



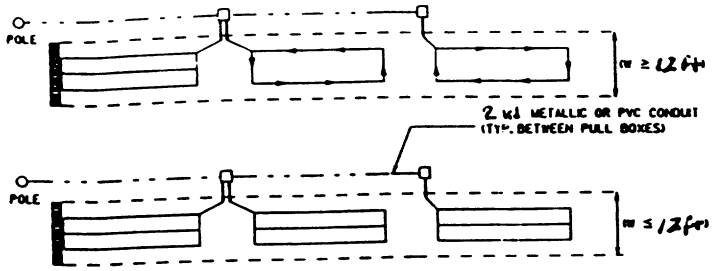
HANDICAPPED PARKING TYPICAL

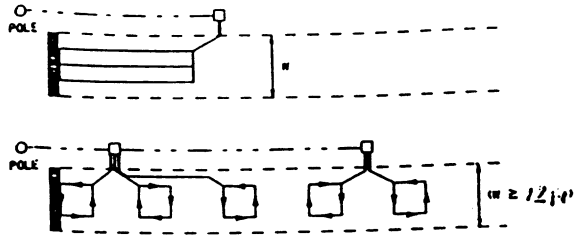
REFERENCE: DOD 4270.1-M CONSTRUCTION CRITERIA; AIA STANDARDS.

TYPICAL HANDICAPPED CAR PARKING LAYOUT	DATE DEC 1988	

FIGURE 1

PRESENCE DETECTION CONFIGURATION DETAILS

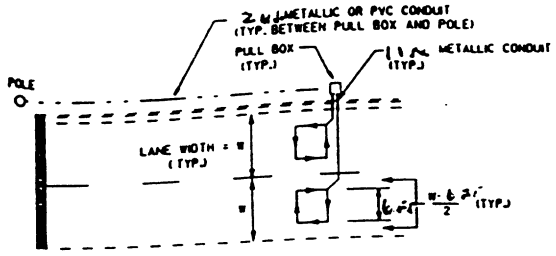




NOTES

1. MAINTAIN 18" MIN SPACING BETWEEN LEAD-IN CABLES IN PAVEMENT.
2. USE 1 1/4" METALLIC CONDUIT AT ALL PAVEMENT EDGES FOR LOOP WIRES LEAVING THE ROADWAY (REFER TO FIGURE 3 FOR SECTION DETAILS).
3. ALL LOOPS WIRED TO THE SAME DETECTOR SHALL BE WIRED IN SERIES.
4. ALTERNATE POLARITY OF ADJACENT LOOPS ATTACHED TO THE SAME DETECTOR UNIT SO THAT ELECTRICAL CURRENT FLOWS IN THE DIRECTION SHOWN ON LOOPS.
5. INSTALL CONDUIT BUSHINGS ON METALLIC CONDUITS.

PULSE DETECTION CONFIGURATION DETAILS



GENERAL NOTES

1. ALL DIMENSIONS ARE IN INCHES (cm) UNLESS OTHERWISE NOTED.
2. NUMBER OF TURNS OF WIRE IN EACH LOOP SHALL BE THE NUMBER INDICATED ON THE SIGNAL PLANS.
3. LOOP DIMENSIONS AND LOCATIONS SHALL BE AS SHOWN ON SIGNAL PLANS.
4. LOOPS SHALL BE LOCATED IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS.

FIGURE 2

LOOP WINDING AND SAW CUT DETAILS

NOTES

1. OPTION 2 IS THE PREFERRED SAW CUT METHOD FOR POOR PAVEMENT. PAVEMENT CONDITION TO BE DETERMINED BY ENGINEER.
2. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
3. TAG AND LABEL LOOP WIRE LEADS TO FACILITATE THE SPLICING OF SERIES AND ALTERNATE POLARITY CONNECTIONS.
4. TWIST LOOP WIRE LEADS SYMMETRICALLY FROM THE PAVEMENT EDGE TO THE PULL BOX AT A RATE OF NOT LESS THAN 15 TWISTS PER METER.

LOOP WIRE TWISTING METHOD

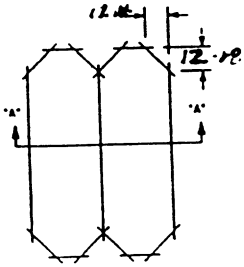
INCORRECT WAY TO TWIST WIRE

CORRECT WAY TO TWIST WIRE

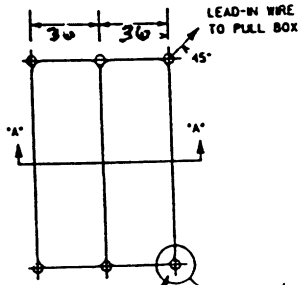
QUADRUPOLE LOOP

SAW CUT OPTIONS

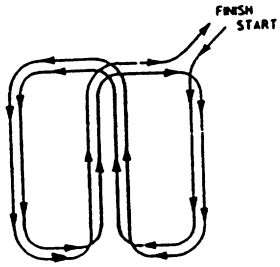
OPTION 1

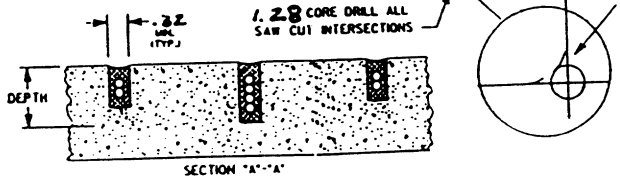


OPTION 2



LOOP WINDING METHOD





SAW SLOT DEPTH CHART

DEPTH (in)	NO. OF WIRE LAYERS				
	2	3	4	5	6
CONCRETE	2	2	2.8	2.8	3
ASPHALT	2	2.6	3	3	3

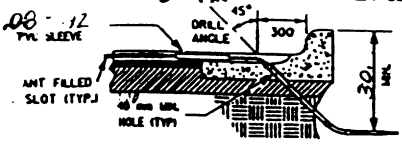
Reference: NCDOT
Traffic Signal Specifications

INDUCTIVE LOOP INSTALLATION

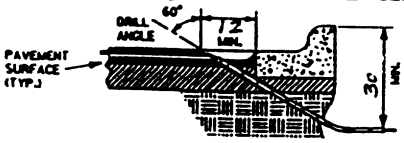
FIGURE 3

LOOP WIRE PAVEMENT EDGE DETAILS

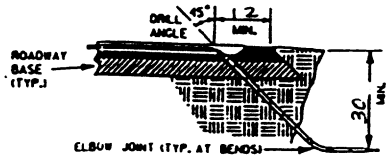
LOOP WIRE AT 30.4 M CURB & GUTTER SECTION



LOOP WIRE AT 18.00 CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



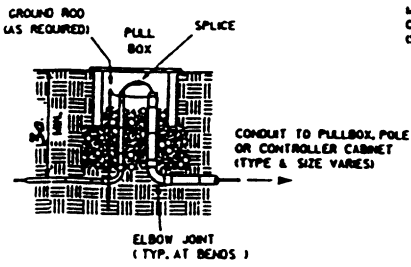
NOTES

1. USE 1 IN. METALLIC CONDUIT AT ALL PAVEMENT EDGES FOR LOOP WIRES LEAVING THE ROADWAY.
2. EXCAVATION UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION IS NOT ALLOWED.
3. FOR LOOP WIRE AT 30.4 CURB & GUTTER SECTION INSTALL 20 mm X 300 mm PVC SLEEVE AND BEGIN TWISTING LEADS AS SHOWN.
4. INSTALL TWISTED LEAD-INS THROUGH CONDUIT AS SHOWN.
5. AFTER LOOP WIRE IS PLACED INTO SAW SLOTS, AND PRIOR TO SEALING SAW SLOTS OR SPLICING LOOP WIRE LEAD-INS TO LEAD-IN HOMERUN CABLE, TEST LOOP WIRES IN ACCORDANCE WITH SECTION 17.8.2.13.
6. PRIOR TO SEALING LOOPS, PLUG CONDUIT TO PROVIDE A WATER PROOF BARRIER AND PREVENT LOOP SEALANT FROM ENTERING CONDUIT WHERE LOOP WIRE LEAVES PAVEMENT SURFACE.

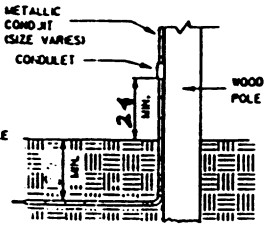
FIGURE 4

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT PULL BOX



LOOP WIRE AT POLE



NOTES

1. ALL LOOP WIRES/HOME RUN CABLE SPLICES SHALL BE MADE IN PULL BOXES OR APPROVED CONDULETS.
2. PULL BOXES SHOULD BE LOCATED A MINIMUM OF 2 ft BEHIND BACK OF CURB; FOR PAVEMENT SECTIONS, A MINIMUM OF 6 ft FROM THE PAVEMENT EDGE, OR WITHIN THE R/W.

FIGURE 5

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

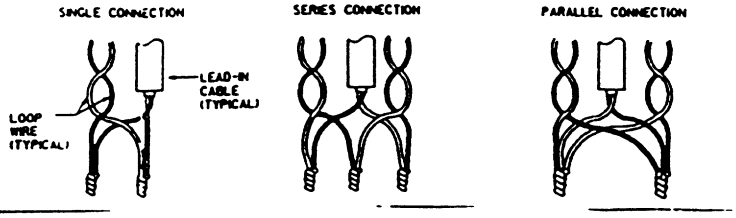
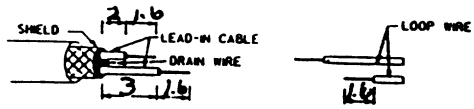
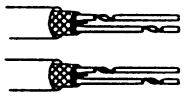


FIGURE 6

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

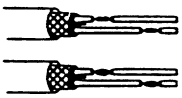


STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

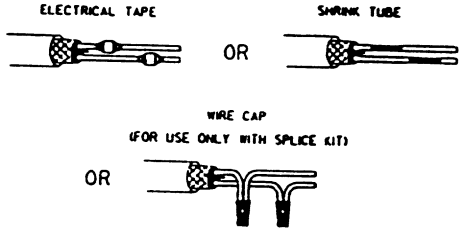
OR



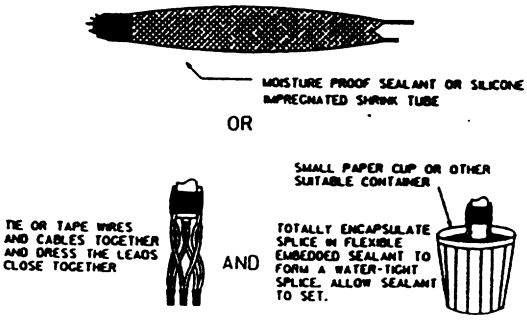
CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSULATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

STEP 2. CONNECT AND SOLDER (REFER TO FIG. 5)

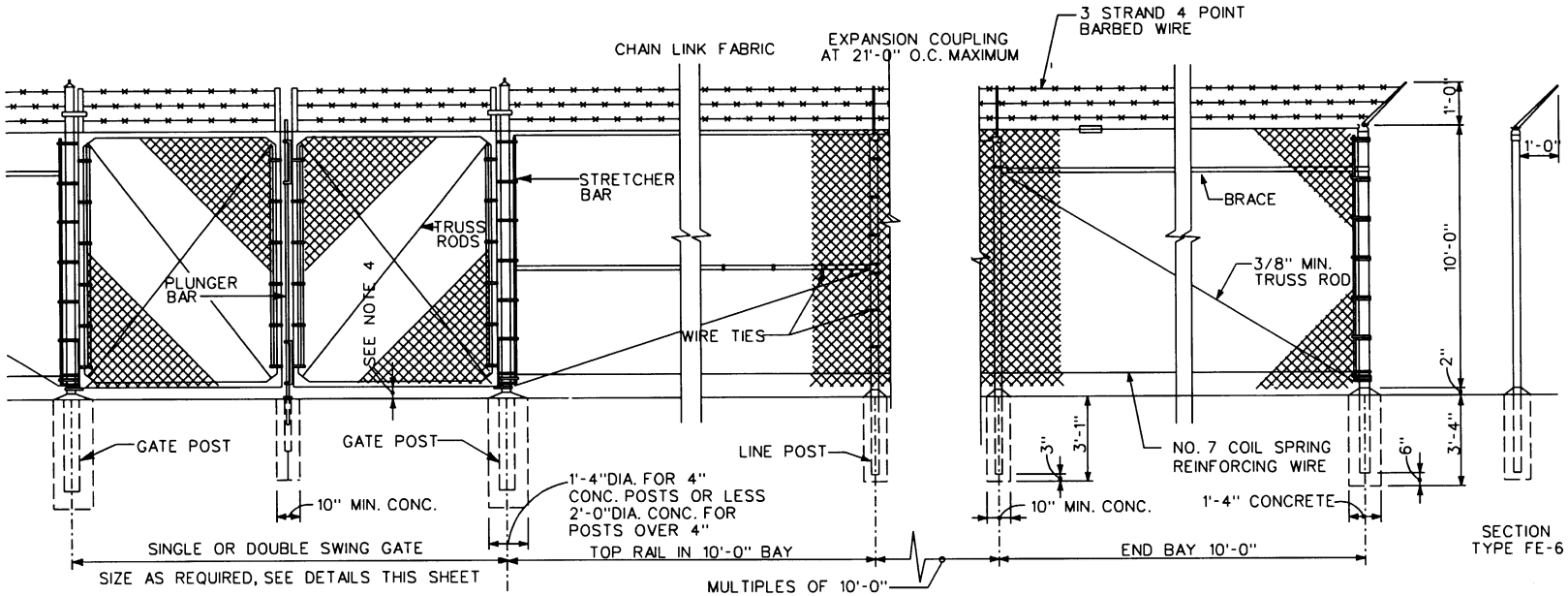


STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



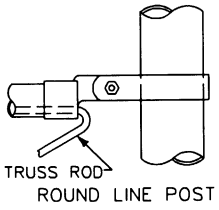
STEP 4. ENVIRONMENTALLY PROTECT TOTAL SPLICE WITH MOISTURE PROOF SEALANT SPLICE KIT, OR SILICONE IMPREGNATED SHRINK TUBE

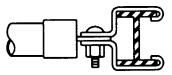
Reference: NCDOT
Traffic Signal Specifications

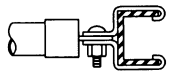


CHAIN LINK FENCE FABRIC TYPE FE-6

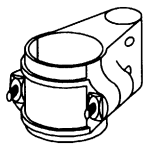
NOT TO SCALE

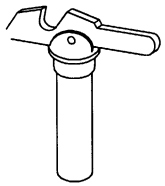


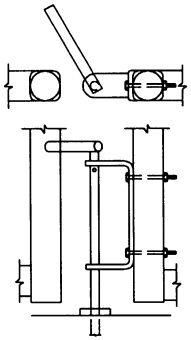

H-BEAM LINE POST

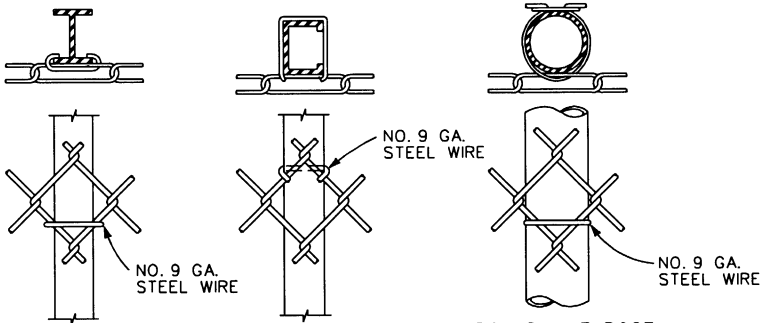

C-SECTION LINE POST

BRACE RAIL AND CLAMP DETAILS
NOT TO SCALE


BRACKET TYPE HINGE
(FOR GATES HIGHER THAN 6'-0")

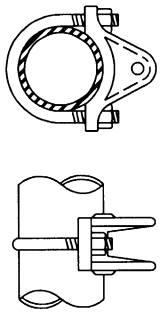

GATE KEEPER
(TO HOLD GATE OPEN)

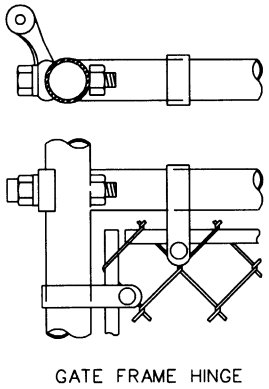

DROP BAR ASSEMBLY



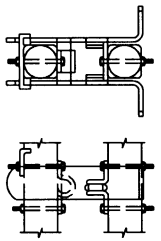
H-BEAM LINE POST C-SECTION LINE POST ROUND LINE POST

FABRIC FASTENING DETAILS
NOT TO SCALE

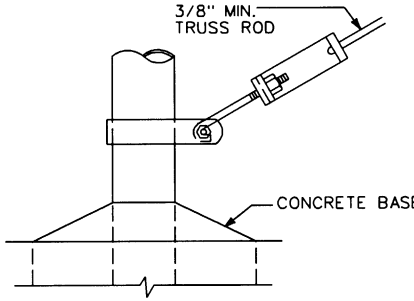

POST HINGE


GATE FRAME HINGE

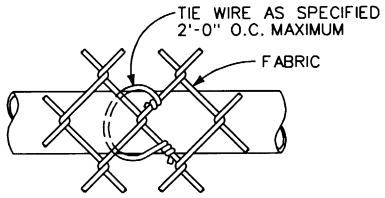
V-BOLT HINGE DETAILS
(FOR GATES LESS THAN 6'-0" HIGH)
NOT TO SCALE


LATCH ASSEMBLY

SWING GATE DETAILS
NOT TO SCALE



TRUSS ROD AND BAND DETAIL
NOT TO SCALE



WIRE TIES FOR
TOP OR BRACE RAIL

CHAIN LINK FENCE DETAIL	SHEET 1 OF 2

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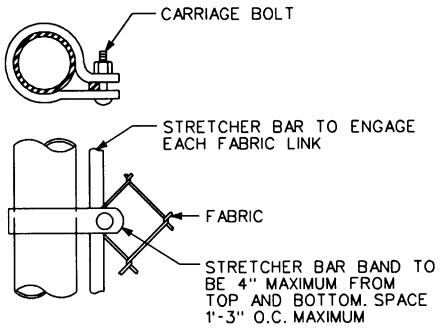
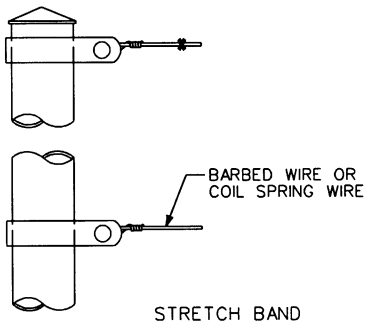
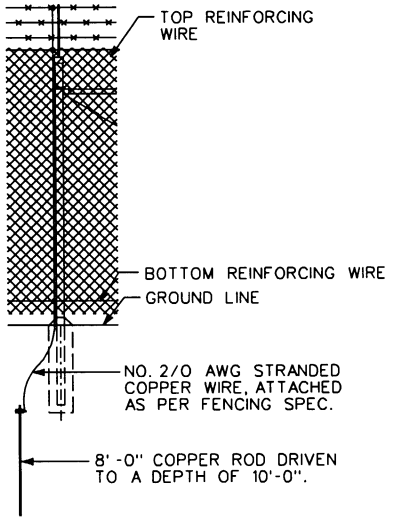


END OR GATE POST



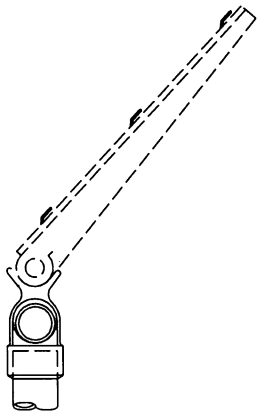
STRETCH BAND

STRETCHING DETAILS
NOT TO SCALE



NOTE:
GROUND ROD TO BE INSTALLED AT SPECIFIED INTERVALS, AS PER SPECIFICATIONS.

FENCE GROUNDING DETAIL
NOT TO SCALE



TOP RAIL BARBED WIRE SUPPORT ARM
NOT TO SCALE

GENERAL NOTES:

1. THIS STANDARD DRAWING CORRESPONDS TO THE REQUIREMENTS OF SAVANNAH DISTRICT GUIDE SPECIFICATIONS SECTION 02831.
2. DETAILS ARE TO CLARIFY REQUIREMENTS BUT ARE NOT INTENDED TO LIMIT OTHER FENCE SECTIONS AND METHODS OF INSTALLATIONS SPECIFIED.
3. BARBED WIRE SUPPORTING ARMS ARE TO POINT OUTWARD, UNLESS OTHERWISE NOTED.
4. GATES SHALL BE HINGED TO FREELY SWING 180° WITH A MAXIMUM CLEARANCE OF 2" WHEN CLOSED.

CHAIN LINK FENCE DETAIL	SHEET 2 OF 2

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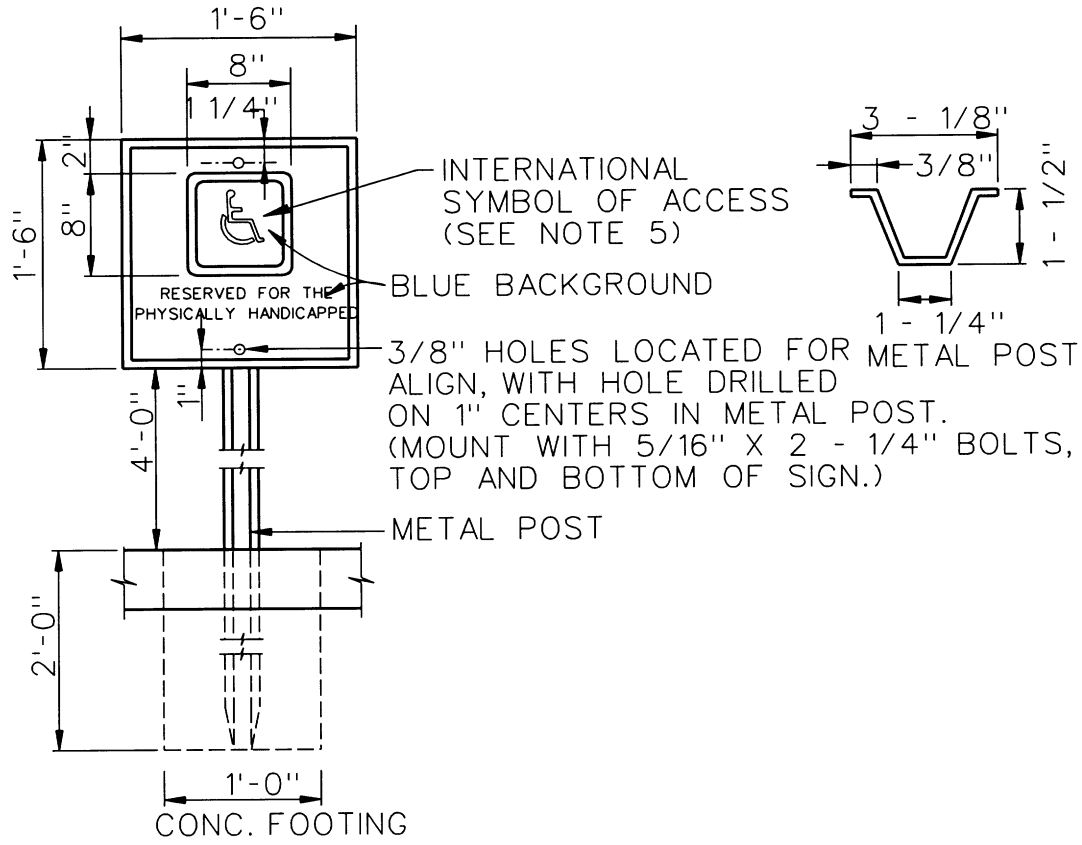
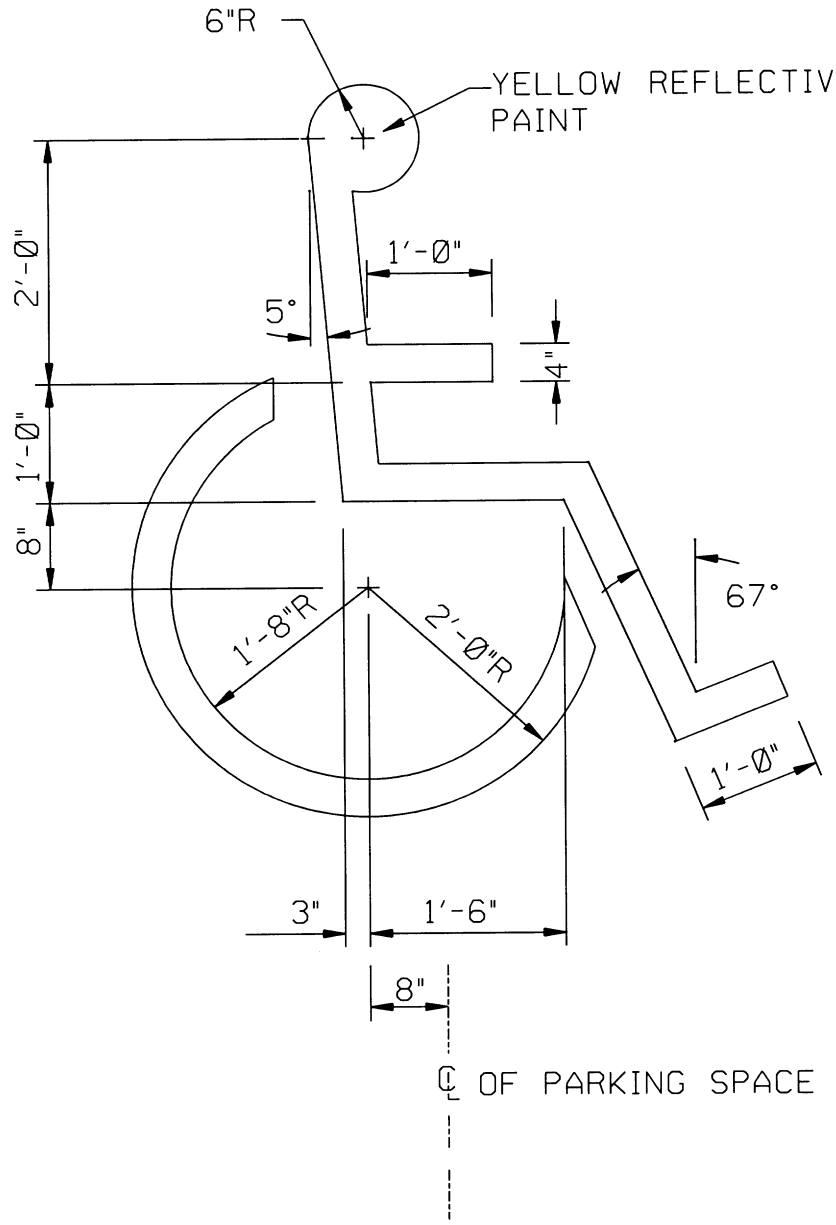


NOTES:

1. METAL POST TO BE GALVANIZED. ALL BOLTS, NUTS, WASHERS, AND SCREWS MUST BE RUSTPROOF.
2. CONCRETE FOR FOOTING SHALL BE OF PORTLAND CEMENT AND HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I.
3. SIGNS WILL BE FABRICATED BY USING A REFLECTING COATING IN THE SYMBOL, MESSAGEAND BORDERS APPLIED TO A SHEET ALUMIN. BACKING (.080") IN THICKNESS
4. MESSAGE LETTERING SHALL BE UPPER CASE (WHITE SERIES B) 2" HIGH IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. THE SYMBOL IS COMPOSED OF TWO ELEMENTS, A WHITE WHEELCHAIR FIGURE (WHICH SHOULD ALWAYS FACE RIGHT) ON A SQUARE BACKGROUND, NTERNATIONAL BLUE IN COLOR (FED. STD. 595A, COLOR #15180).
6. SIGN POST SHALL HAVE MIN, 2.0' CLEARANCE FROM BACK OF CURB.

SIGN FOR THE PHYSICALLY HANDICAPPED

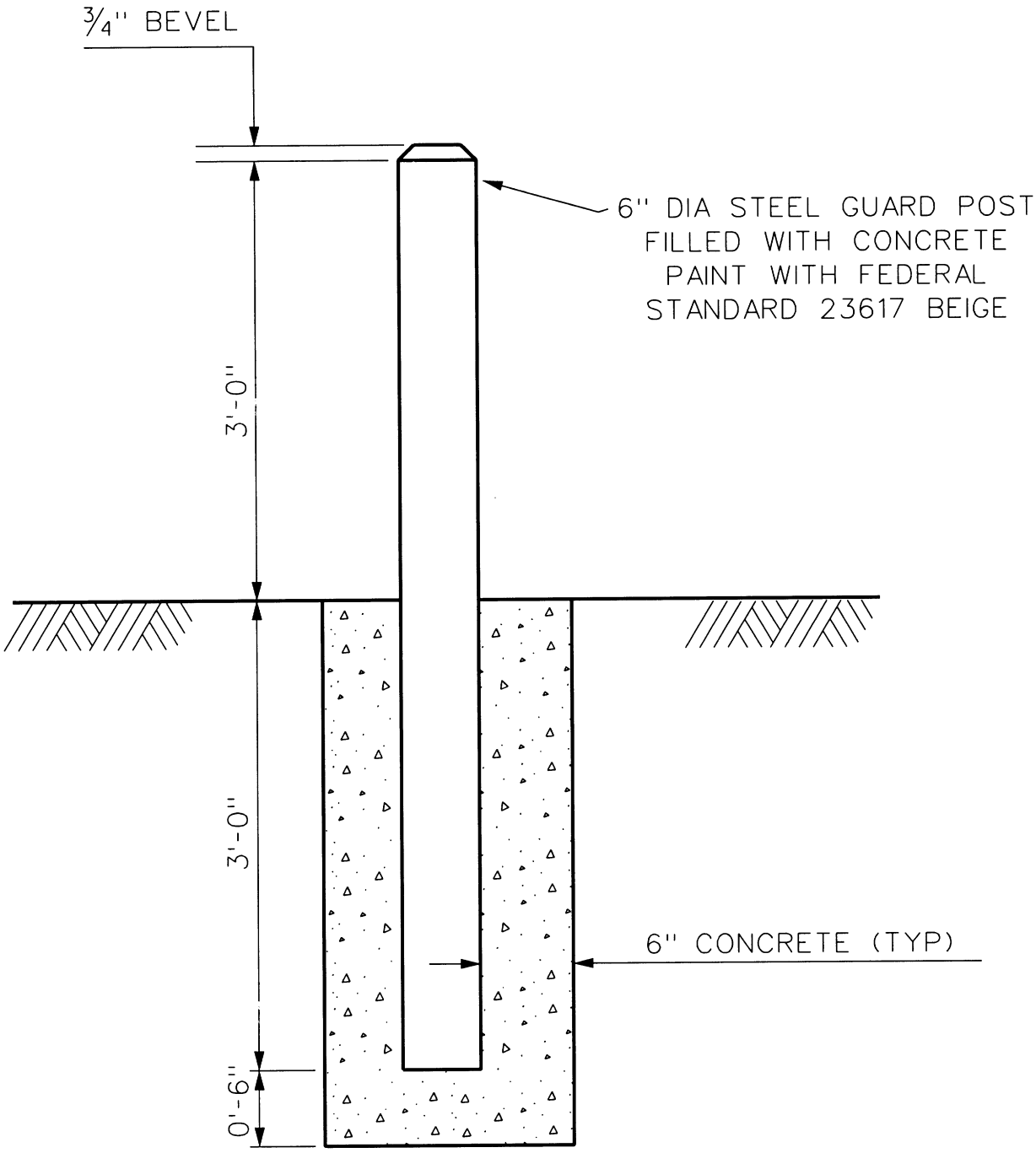
NOT TO SCALE



** USE 5' WIDE LOADING ZONE FOR ALL HANDI-CAP PARKING SPACES UNLESS NOTED AS "VAN ACCESSIBLE". USE 8' WIDE FOR "VAN ACCESSIBLE" SPACES.

INTERNATIONAL HANDICAP SYMBOL

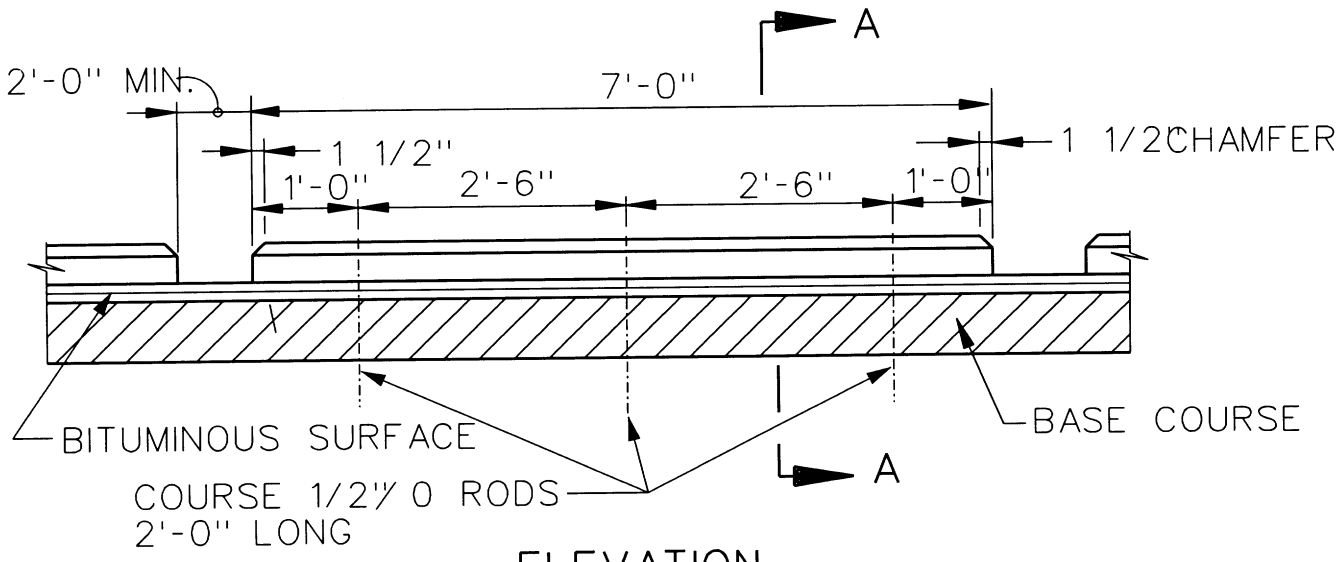
NOT TO SCALE



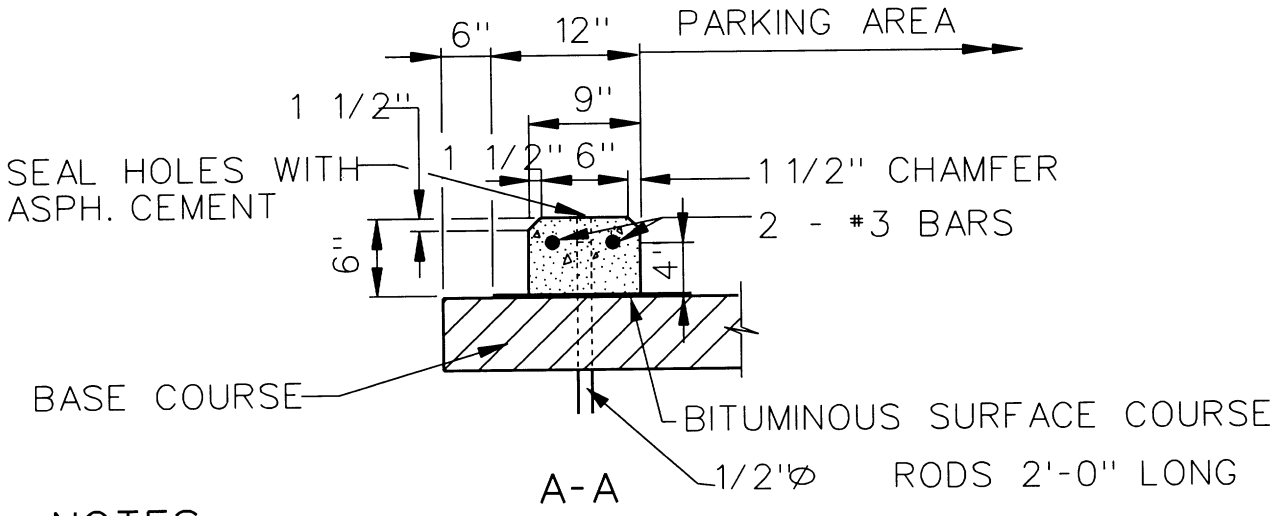
BOLLARD DETAIL

NOT TO SCALE

SHEET 1 OF 1



ELEVATION



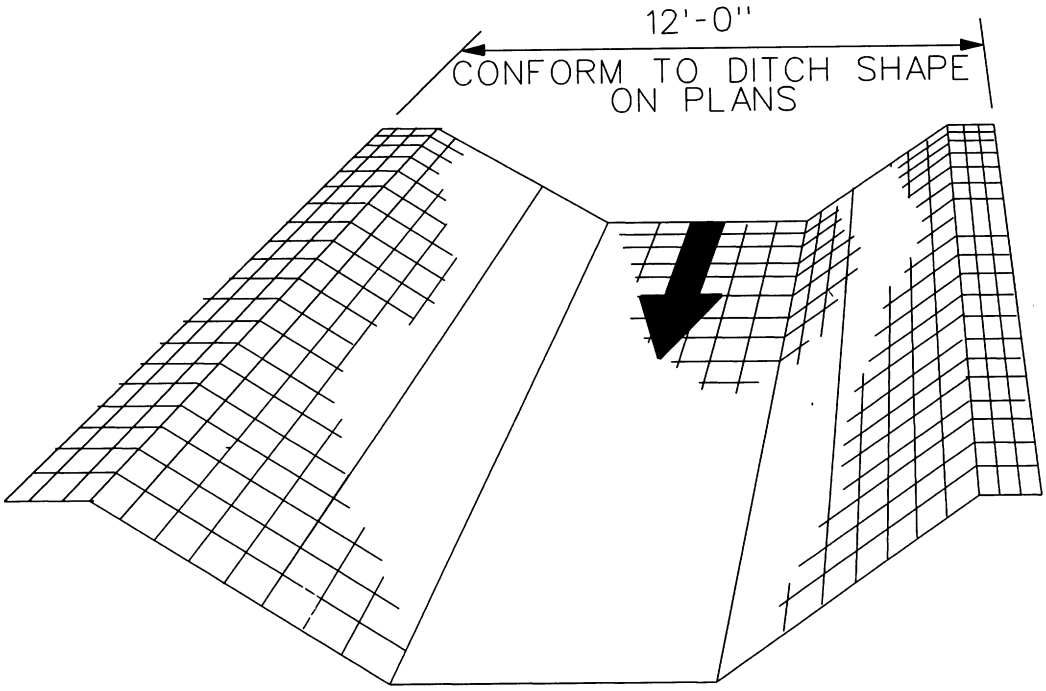
A-A

NOTES:

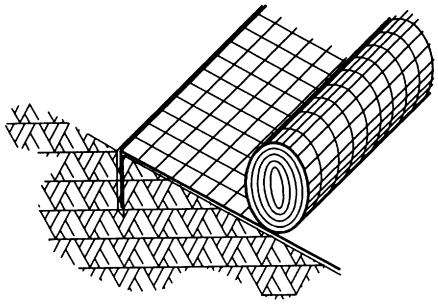
1. ANCHOR RODS THRU CONCRETE CURBS TO BE SLEEVED ROR GREASED TO PERMIT RELOCATION OF WHEEL STOPS.
2. CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I., IN ACCORDANCE WITH ASTM C-94.
3. STEEL BARS SHALL CONFORM TO EITHER ASTM A 615, 616 OR 617, GRADE OPTIONAL.
4. PRECAST WHEEL STOP DIFFERING ONLY IN NON-ESSENTIAL DETAILS WILL BE ACCEPTED.

CONCRETE WHEEL STOP DETAIL

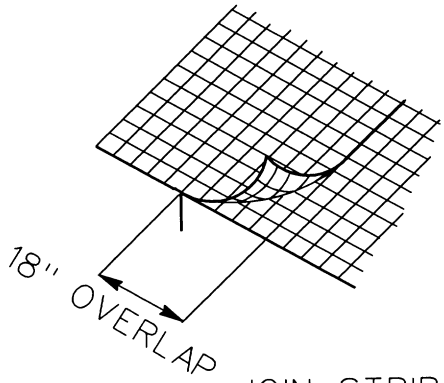
NOT TO SCALE



IN CHANNELS ROLL OUT STRIPS OF NETTING PARALLEL TO THE DIRECTION OF FLOW AND OVER THE PROTECTIVE MULCH.*



ANCHOR NETTING
IN A 6" TRENCH.



JOIN STRIPS BY ANCHORING AND OVERLAPPING.

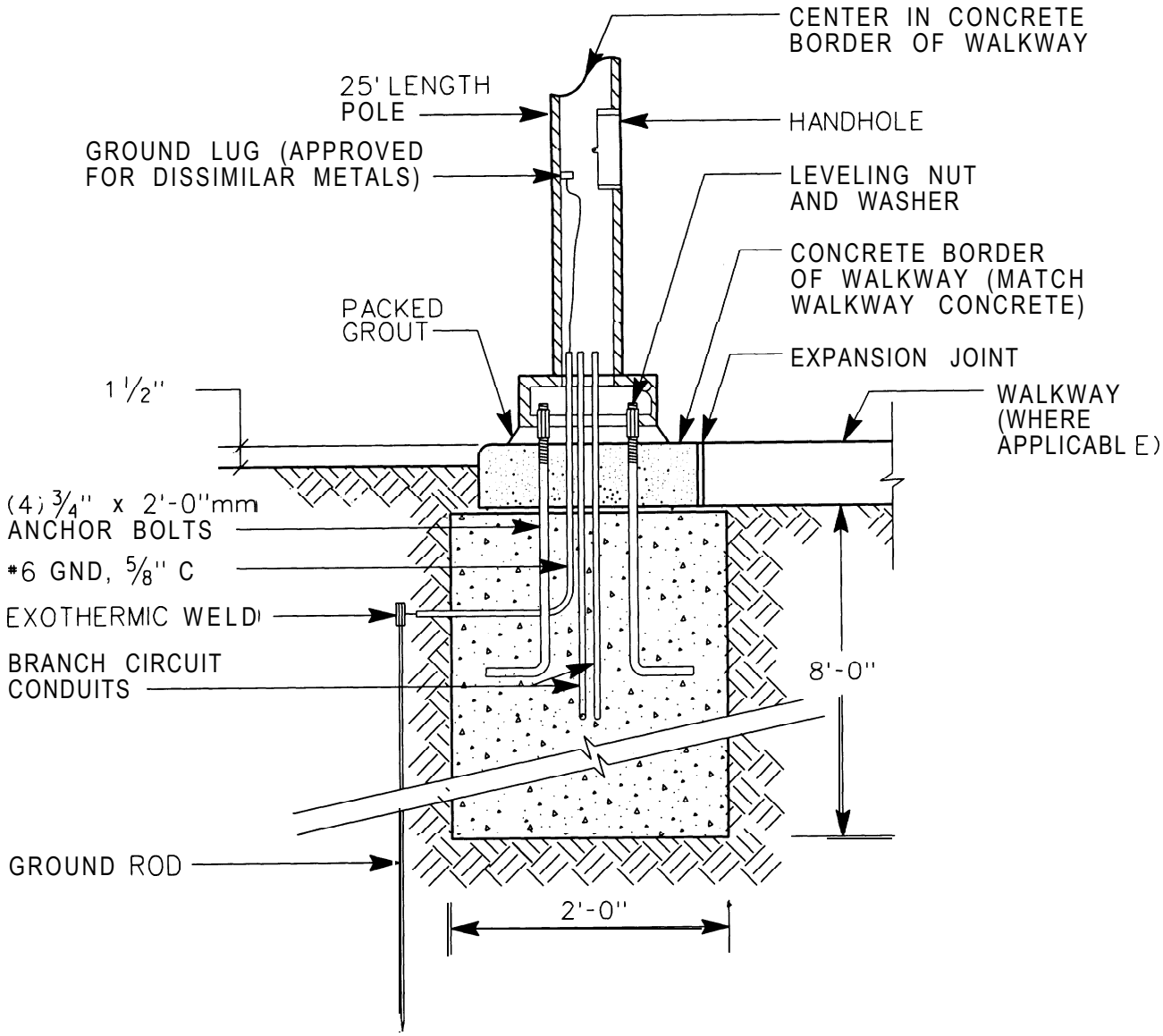
* OMIT MULCH FOR JUTE MATTING.

INSTALLATION OF NETTING AND MATTING

NOT TO SCALE

INSTALLATION OF NETTING AND MATTING

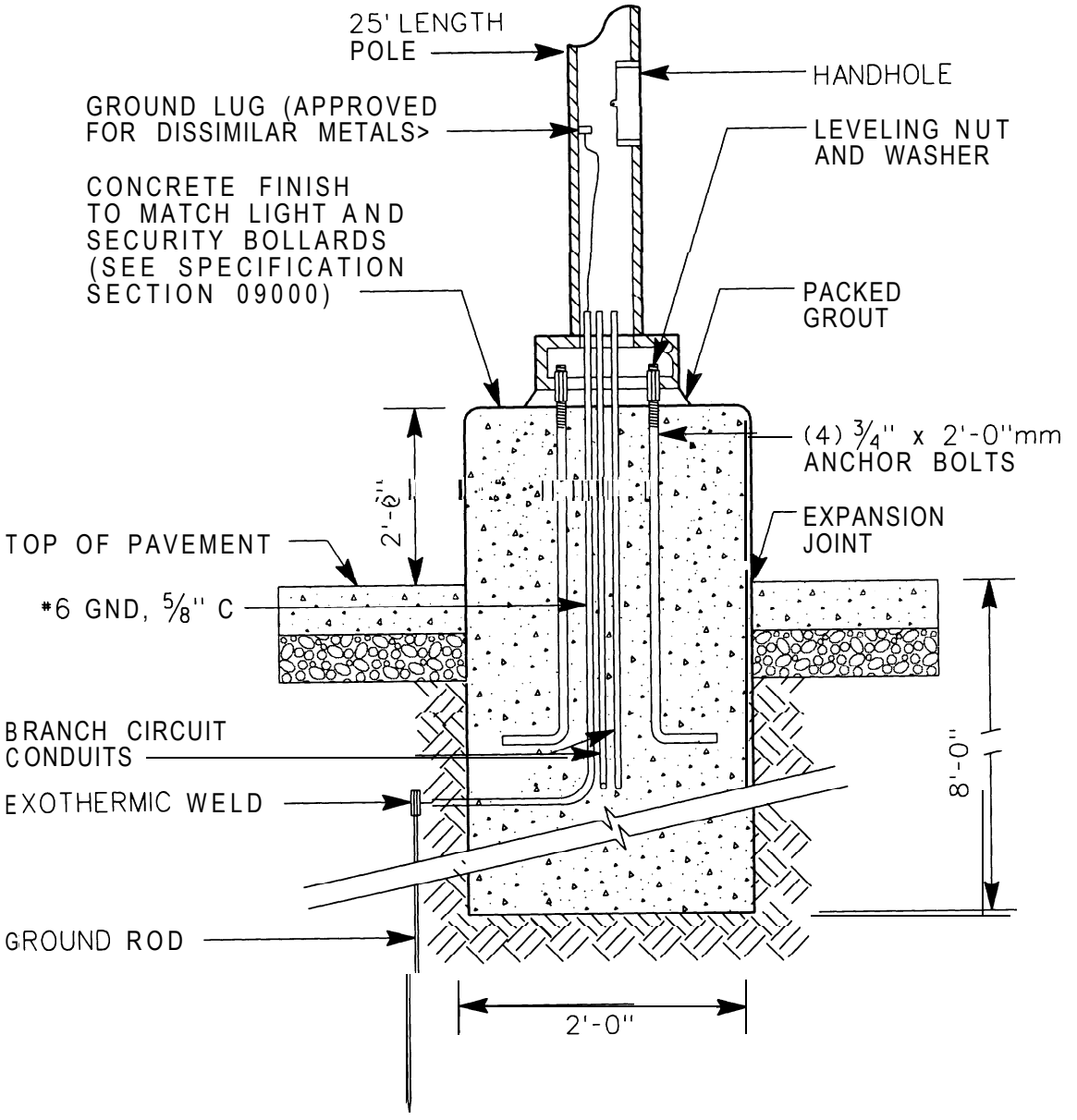
NOT TO SCALE



TYPE B1 POLE AND BASE DETAIL

THE POLE SHALL BE CONSTRUCTED **OF SEAMLESS SQUARE EXTRUDED ALUMINUM** TUBE WELDED TO A **CAST ALUMINUM BASE. A FLUSH CAST ALUMINUM POLE CAP SHALL** BE PROVIDED. THE BASE SHALL HAVE **A CAST ALUMINUM ANCHOR BOLT COVER SECURED TO THE BASE BY STAINLESS STEEL SCREWS THAT HAVE TO BE DRILLED TO BE REMOVED. THE** HANDHOLE **SHALL BE APPROXIMATELY 450mm ABOVE THE BASE AND SHALL INCLUDE** A GASKETED **COVER AND GROUND LUG. POLES AND FOUNDATIONS SHALL WITHSTAND STEADY WINDS OF 54 METERS PER SECOND** (120 **MILES PER HOUR) WHEN FIXTURES ARE** MOUNTED TO POLE. PROVIDE A DRAINAGE CHANNEL THROUGH GROUT **AT POLE BASE. ANCHOR BOLTS SHALL** BE PRE-FABRICATED **AND FURNISHED BY THE POLE MANUFACTURER. THE BASE SHALL BE REINFORCED WITH** 4*8 **VERTICAL REBAR AND WITH** *3 **HORIZONTAL REBAR** 300mm ON **CENTERS, 375mm LAP. ANCHOR BOLTS SHALL BE COORDINATED WITH AND TIED TO THE REINFORCING STEEL STRUCTURE OF THE BASE.**

TYPE B1 POLE AND BASE DETAIL

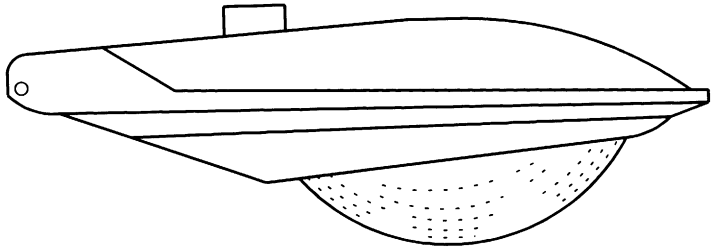


TYPE B2 POLE AND **BASE** DETAIL

THE POLE SHALL BE CONSTRUCTED OF SEAMLESS SQUARE EXTRUDED ALUMINUM TUBE WELDED TO A CAST ALUMINUM BASE. A FLUSH CAST ALUMINUM POLE CAP SHALL BE PROVIDED. THE BASE SHALL HAVE A CAST ALUMINUM ANCHOR BOLT COVER SECURED TO THE BASE BY STAINLESS STEEL SCREWS THAT HAVE TO BE DRILLED TO BE REMOVED. THE HANDHOLE SHALL BE APPROXIMATELY 450mm ABOVE THE BASE AND SHALL INCLUDE A GASKETED COVER AND GROUND LUG. POLES AND FOUNDATIONS SHALL WITHSTAND **STEADY** WINDS OF 54 METERS PER SECOND (120 MILES PER HOUR) WHEN FIXTURES ARE MOUNTED TO POLE. PROVIDE A DRAINAGE CHANNEL THROUGH GROUT AT POLE BASE. ANCHOR BOLTS SHALL BE PRE-FABRICATED AND FURNISHED BY THE POLE MANUFACTURER. THE BASE SHALL BE REINFORCED WITH 4#8 VERTICAL REBAR AND WITH #3 HORIZONTAL REBAR 300mm ON CENTERS, 375mm LAP. ANCHOR BOLTS SHALL BE COORDINATED WITH AND TIED TO THE REINFORCING STEEL STRUCTURE OF THE BASE.

TYPE B2 POLE AND **BASE DETAIL**

TYPE EB
COBRAHEAD ROADWAY LIGHT



COBRAHEAD ROADWAY LIGHT

TYPE HIGH PRESSURE SODIUM
400 WATT

HOUSING: THE FIXTURE SHALL INCLUDE A PRECISION DIE-CAST ALUMINUM UPPER AND LOWER HOUSING AND SHALL HAVE AN ELECTROCOAT GRAY PAINT FINISH. THE LOWER HOUSING SHALL BE HINGED AND SEPARABLE AND SHALL HOLD THE REFRACTOR IN PLACE. A BOLT-ON SLIPFITTER SHALLSECURELY FASTEN THE FIXTURE TO A 30mm TO 50mm PIPE BRACKET AND SHALL ALLOW +/-5% ADJUSTMENT FROM THE HORIZONTAL. THE FIXTURE SHALL INCLUDE A FACTORY INSTALLED POLYMER BIRD GUARD AND AN EXTERNAL QUICK RELEASE STAINLESS STEEL BAIL LATCH REQUIRING NO TOOLS AND OPERABLE WITH A LINEMAN'S GLOVES.

OPTICAL ASSEMBLY: THE OPTICAL ASSEMBLY SHALL CONTAIN AN ALUMINUM REFLECTOR AND A CHEMICALLY BONDED LIGHTWEIGHT NON-BREAKABLE GLASS FINISH ON BOTH THE INSIDE AND OUTSIDE SURFACES. ELASTOMER GASKETING SHALL BE PROVIDED BETWEEN THE REFLECTOR AND A HEAT AND IMPACT RESISTANT GLASS PRISMATIC REFRACTOR. CHARCOAL FILTERING SHALL ALSO BE PROVIDED.

ELECTRICAL: THE FIXTURE SHALL BE COMPLETELY PREWIRED AND SHALL INCLUDE A HIGH POWER FACTOR (0.90 MINIMUM) BALLAST WITH A PUBLISHED BALLAST FACTOR OF UNITY. FIXTURE SHALL INCLUDE A PREWIRED NO-TOOL PHOTOELECTRIC CONTROL RECEPTACLE WITH A FAIL-ON PHOTOELECTRIC CELL. THE FIXTURE SHALL BE UL LISTED FOR WET LOCATIONS.